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Car Shortage Vanishes—Page 99

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IRON TRADE REVIEW

Registration Applied For

Published Weekly
VOL. LXXIII. No. 2

CLEVELAND, O., JULY 12, 1923

Entered as second-class matter at the post-office in Cleveland, Ohio, under the act of March 3, 1879

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Pittsburgh, Pa.
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IRON TRADE REVIEW
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The Authority of Industry — National and International
Vol. LXXIII — Cleveland, July 12, 1923 — No. 2

Curtailment Of Output Begins

Merchant Blast Furnaces Go Out as Buying Lags and Overproduction Appears—June Ingot Total Smallest since February—Fair Volume of New Steel Orders but Heavy Shipments Cut into Bookings—Finished Prices Steady

IRON and steel production is coming down several degrees from its recent record-breaking height, principally because of the reduced volume of new buying, with seasonal and other causes contributing. Curtailment to date has been limited almost entirely to merchant blast furnaces as falling prices in pig iron have reached or crossed the cost line and some stocks have been accumulated. Within the week six stacks were blown out including two in Southern Ohio, one each at Milwaukee, New Jersey, Western Pennsylvania and Alabama and several additional were banked. Others are slated to follow shortly. Steelworks operations are little affected and where any reduction of output has occurred, it has been due to temporary factors since buyers continue to take out freely their tonnage on mill books. The loss of 595,090 tons in the unfilled orders of the Steel corporation in June illustrates the wide margin between present heavy shipments and restricted new business, amounting to about 23,000 tons daily. Despite this fact, deliveries with the largest producer, have shown no signs of material easing.

New buying of steel while below shipments still constitutes a fair tonnage. Eastern plate mills have been booking new orders at an 85 per cent rate. An order for 250 miles of pipe for a gas line for Calgary, Alberta, requiring 25,000 tons has been divided between American and British mills. The New York Central this week distributed 6000 tons of miscellaneous steel for shop needs. Additional orders for about 10,000 tons of oil tanks are reported. Reinforcing bar awards reported this week exceed 11,000 tons. Lake yards now are figuring on new work requiring 20,000 to 25,000 tons. An early call for bids on 17,000 tons for a pipe line at Portland, Ore., is expected. The new Ford plant at St. Paul calls for 7500 tons.

Ingot Output Is Less

Steel ingot production in June fell away 7 per cent and was at the approximate daily rate of 144,188 tons compared with 155,400 tons in May and 157,776 tons in April, the peak month. The June output, 3,748,890 tons was the smallest since February. For the first half of the year, steel ingot production totaled 23,213,243 tons or over 46,000,000 tons annually, a high record.

Place Car Orders

Railroad requirements are keeping on a high scale. This week has seen some revival in freight car buying with orders totaling over 2000 of which 1500 was for the New York Central. This is a larger total than that placed in the entire month of June. Car orders for the first six months of the year totaled 80,000 compared with 100,000 for the similar period last year. Steel rail business up at Chicago amounts to 160,000 and 60,000 tons of this for the Illinois Central has been practically closed, half of it going to the Ensley mill.

Lower pig iron prices still are the cause for the dipping of IRON TRADE REVIEW composite of fourteen leading iron and steel products which this week stands at $45.49. Last week it was $45.72.

Finished steel prices are holding firm, the only concessions being in black sheets and wide strips.

New extras on steel bars and small shapes put out by the Carnegie Steel Co., and leading independent producers are more sweeping than indicated in the first announcement last week. The schedule has been completely revised and the advances range up to $20 per ton. The extras became effective July 5.

British makers of ferromanganese this week reduced their prices $7.50 per ton to $117.50, duty paid tidewater. Domestic makers are meeting the cut.

Signs of some overproduction in pig iron has kept prices weak and buyers diffident. The market again is 50 cents to $1 lower at Pittsburgh, Chicago, Buffalo and Eastern Pennsylvania. Basic has been sold by furnaces at $25 valley and at $27.25 to $28 delivered Eastern Pennsylvania and by middle hands at $24.50 valley. The volume of sales is moderate.

Europe Talks Combine

A languishing iron and steel market in Europe, which has become more marked in Great Britain has revived talk of a combination of European steelmasters to control foreign trade. The proposed agreement would include principal works in Great Britain, France, Belgium, Luxemburg and Germany and its operations would be contingent upon settlement of the Ruhr question.

Business Trend and Chart Section Page 99

Pig Iron Decline Not Yet Halted

Further Sagging Shown at Pittsburgh, Chicago, Buffalo and in the East—Resale Basic Goes at $24.50 Valley—Buyers Still Close Sharply—Some Stocks Accumulate and Production Undergoes Curtailment

PITTSBURGH, July 10.—The pig iron market continues to show only meager signs of life but leading producers believe numerous users will come in before the month is over. Small sales of foundry iron alone are being made at present at $25.50 to $26, valley base, a decline of $1 since a week ago. One valley maker has sold several fair-sized lots to middle interests and smaller ones direct to users at $25.50. One producer is quoting $27 to $27.50, f.o.b. Dunbar. Gray forge steel is quoted at $25.50, valley, and malleable 50 cents less than a week ago at $25.50 to $26, valley. Recent malleable purchasers of 500 to 1000 tons each are the Jamestown Malleable Products Corp., the American Malleable Corp. and the International Harvester Co. Prices vary on malleable depending upon analysis. No large inquiries at present are noted although several foundry iron consumers are expected to buy an aggregate of 5000 to 10,000 tons, one group of size having issued tentative inquiries for a total of 3500 tons. Basic has declined another 50 cents from the level of a week ago. A Butler, Pa., consumer purchased 500 tons of valley steelworks basic iron through a middle interest at $25, valley, but the matching up of this price by one valley merchant producer developed no orders. The Pittsburgh Steel Foundry Co. bought 6500 tons of basic at $25.12, nearby furnace. The Allegheney Steel Co., is reported to have bought 2500 tons resale iron from a middleman at $24.50, valley. An unverified report is that a nearby melter closed on 1500 tons of basic at $24, valley, with a merchant furnace At any rate, $25 valley is the minimum quotation from merchant furnaces today. Small sales of bessemer are being closed at $26.50 to $27, valley, and a single carload recently brought $27.50, valley. The Reliance Steel Casting Co. and one other nearby consumer each bought small lots of bessemer below $27. More furnaces are being banked and this curtailment of production may strengthen the price situation although it is understood approximately 300,000 tons of pig iron are stored on furnace yards in the Pittsburgh and valley districts.

New England Market Dull

Boston, July 10.—The pig iron market in New England is quiet. Aside from scattered car lots there has been no business of importance. Foundries are showing a disposition to withhold orders as long as possible, but dealers here believe that stocks are generally low. Many foundries closed for the holidays and for inventory purposes. Two or three substantial inquiries which were reported last week have been put off for the second time. Inquiries are out for 600 tons of No. 1X and No. 2X for a large jobbing foundry, and a machinery manufacturer is in the market for 300 tons of various grades. In the absence of

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sales dealers are uncertain as to prices. It seems to be the concensus that the market for eastern Pennsylvania iron is about $32.15, delivered to Boston, for No. 2X; Buffalo iron about $31.91 for the same grade, and $32.92 for Virginia. Differentials seem to be somewhat more uncertain also, but for the present the 50-cent differential seems to hold. These prices are about $1 lower than a week ago.

Some Furnaces Blow Out

Cincinnati, O., July 11.—Activity in the local pig iron market continues on a small scale. Sales during the past week, aggregate more than 5,000 tons. Inquiry appears in better volume but there is nothing to indicate an early buying movement. Because of the unsatisfactory condition of the market, the Star furnace at Jackson, O., is contemplating going out during the coming week. The Milton furnace has already ceased operations while the Belfont Iron Works now is producing bessemer iron for its steel plant connection at Ashland, Ky.

While prices are unchanged, they are weak. The southern Ohio market ranges from $27 to $27.50, Ironton and low silicon iron can be had at $26, base. The southern market is quoted generally at $27, Birmingham, although $25 still can be done with two furnaces for third quarter. It is reported one of these furnaces still has 1500 tons to sell at $25 base, and then will jump back to the $27 level. The most important sale of the week was 1000 tons of southern, northern and charcoal iron to the Louisville & Nashville railroad. Two local sellers obtained 430 of the 700 tons of the southern iron specified. The remainder of the southern, northern and charcoal iron was placed through the Philadelphia office with a southern furnace direct. The inquiry of Swain, Robinson & Co., Richmond, Ind., for 500 tons of northern iron has been increased to 1500 tons of the same grade for fourth quarter. The Link-Belt Co., is inquiring for 3000 tons of malleable for Indianapolis. A leading seller reports the sale of 1500 tons of Virginia iron through its Philadelphia office to a Virginia consumer for third quarter. It is reported a melter at Port Huron, Mich., is in the market for 2000 tons of malleable for third quarter, while another Michigan melter wants 2500 tons of northern foundry. An inquiry from a Buffalo melter for 1600 tons of fluorspar for August, September and October delivery, also is noted. The Hamilton Foundry & Machine Co. want 500 tons of Northern and 500 tons of Southern and the Hooven, Owens & Rentschler Co., Hamilton, 750 tons of Northern. Sellers here report electrolytic silvery irons are being sold below Jackson county quotations.

More Buying In The East

New York, July 10.—Buying of pig iron has been better last week than for many weeks past, the total being close to 10,000 tons. The largest transaction involved a round tonnage which was taken by a New York air brake manufacturer. The Ingersoll-Rand Co., recently closed its inquiry for a tonnage of malleable for Painted Post, N. Y. The Gould Coupler Co. bought several thousand tons of basic for its plant at Depew, N. Y. Current inquiry is somewhat better. A New Brunswick, N. J. plant is in the market for 700 tons of foundry for the fourth quarter and 500 tons for the first quarter of next year. Another New Jersey melter is inquiring for 200 tons of foundry for third quarter. The New York Central railroad is in the market for 200 tons of foundry. The William M. Crane Co., Jersey City, has not yet closed on a recent inquiry for several hundred tons of foundry. A Waterbury, Conn., interest has not yet taken action on 500 to 1500 tons of foundry for third quarter delivery. On account of the extent to which stocks have been accumulating at blast furnaces, several operators are thinking about blowing out stacks. The Replogle Steel Co., on July 1, put its B furnace at Wharton, N. J., on the idle list. Of the furnaces which in whole or in part ship their output into the general eastern territory, 16 more are active now than March 31. Prices now have reached the level which are below the cost of production for some stacks. It is estimated that none of the eastern furnaces, taking all cost factors into consideration, can produce pig iron at less than $26 and with some the cost is not under $29. During the past week, eastern foundry has been sold at $27, furnace, plus $1 silicon differentials, and this level now is regarded as indicative of the real market. On Central Pennsylvania foundry the market now may be regarded as $26 to $26.50, base furnace.

Inquiry More Active

Cleveland, July 10.—Some good inquiries are pending in the pig iron market, involving around 10,000 tons in fair size lots which have come before furnace interests for figures in the week. The largest of these, for which there is considerable competition, is for 3000 tons of malleable for the Link-Belt Co.'s Indianapolis plant in August and September. Some of the furnaces represented in the northern Ohio group have been endeavoring to get a line on what producers in southern Ohio are offering, but there is no indication that less than $27 has been done since several sales were made on that basis

a week ago. The inquiries for tonnages seem to be coming more from the territories east and west of this district. Michigan is represented by several 2000-ton lots. Indiana by tonnages ranging from 1000 to 3000 tons. These inquiries are indicating a gradual improvement in the market, though sales of foundry iron continue in moderate volume, and confined to lots from 500 to 1000 tons. One sale of the latter size was made in the western end of this district. Another sale of 1000 tons was made for delivery from a New York state stack, on a basis of $27.25, Buffalo, although $27 is nearer the level of the Buffalo market. A buyer claimed to be able to obtain 500 tons of foundry iron at $26, valley basis, but closed at $26.50 for prompt delivery. Melters are being forced into the market for iron, and there is more activity in the spot market. A large electric manufacturing company has made three successive purchases of moderate size tonnages in recent weeks, in preference to combining them and covering at one time. A steelmaker in the Pittsburgh district is understood to have closed for 3000 tons of basic at $24.50, valley from a middleman. This marks the lowest price so far reported done in the steelmaking grade. Locally, the market for pig iron continues quiet. There is a lack of business to test prices. One interest, on a higher basis a week ago, is quoting $28, furnace for No. 2 foundry. This grade can be had at $26, valley, plus $1.77 for delivery to Cleveland; so that the range here is $27.77 to $28.50, delivered.

Buffalo Inquiry Is Heavier

Buffalo, July 10.—Inquiry is better, totaling 15,000 tons. Better sales were reported, one interest having booked a total of 3000 tons. The inquiry listed did not consist in the main of large individual inquiries, one for 1000 tons being the highest. Gould Coupler Co., Depew, N. Y., has placed 500 tons of malleable and 2000 tons of basic with Buffalo makers. The price was below $27 in each case. The major portion of the iron sold is going at $27 base with sizable tonnage bringing out lower prices.

Buyers Still Waiting

St. Louis, July 10.—Recent sharp declines in pig iron prices have failed to arouse interest among consumers. In sales and inquiry, the week has been the quietest experienced this year. The only inquiry worthy of note was from an Indiana melter for 200 tons of foundry iron. Competition is unusually keen, and prices are being shaded. Evidence is growing that furnaces are accumulating stocks. The majority of melters in this district are not carrying heavy supplies, either on their yards or under contract. Those best supplied have no more than enough iron to carry them through the third quarter, and many must purchase additional tonnages for that period if they intend to maintain their present rate of consumption. The general attitude, however, is to defer commitments and take advantage of the spot market. Sellers generally are of the opinion that a buying movement cannot be delayed beyond the end of July. Northern iron is

(*Concluded on Page 78*)

Coke Orders Shrinking

Contract Suspensions Begin as Furnaces Slow Up—Ovens Also Going Out—Spot Furnace Fuel $4.50 to $5

COKE PRICES, 79

Pittsburgh, July 10.—Comparative quietness prevails in the market for standard beehive furnace coke, the last contracts noted having been at $4.75. These included tonnages for M. A. Hanna & Co.'s Port Colborne, Ont., furnace for the third quarter, and 7000 tons for July shipment to the Wheeling Steel Corp. One furnace coke producer receiving a suspension on a contract recently has resold the coke for the period of the suspension with a guarantee to supply the coke for at least 30 days at $4.50; so that $4.50 to $4.75 now represents the contract market and $4.50 to $5 the spot market, occasional small lots being sold at that maximum. Practically no inquiries now are current for blast furnace requirements, so the possibility is that more suspensions will be made and more coke will be thrown on the market since additional furnaces are to be blown out or banked. It is understood that a contract for 1000 tons of coke per day from a large interest is to be suspended about the middle of the month. This is causing the putting out of numerous coke ovens, 25 or more at a time, one interest having discontinued 200 ovens during the past several days. Off-grade coke has stiffened somewhat in price under the influence of a flurry in demand, and the $3.50 price of a few weeks ago has disappeared for the time being. This grade now is quoted at $3.65 to $4. During the past week or so one interest sold 16,000 tons for shipment to Canada, 8000 tons to the International Nickel Co. by rail, 4000 tons to the same interest by boat to another destination, and 4000 tons to the Mond Nickel Co. Sellers report an increased movement in domestic coke as a substitute for anthracite coal. This tendency doubtless will be accentuated if the anthracite miners strike. Spot crushed coke for domestic purposes in the egg size is quoted at $6.50, nut size at $5.75 and pea size at $3.50. Water gas producers are prospective purchasers of furnace coke as an anthracite substitute. A fairly good movement of standard selected Connellsville foundry coke is noted at relatively low prices, $5.25 to $6.50 being the present full spread. On contract for 1000 tons or more with delivery spread over a specified period, $5.75 to $6.50 is the spread while $5.25 to $5.75 is being done in the spot market. Production, according to the *Connellsville Courier*, for the week ended June 30 was 304,220 tons as compared with 306,720 tons the preceding week.

Quote $13.50 in New England

Boston, July 10.—The leading Boston and Providence, R. I., producers continue to quote foundry coke at $13.50, delivered in New England within a $3.10 freight radius. No change in domestic coke prices is reported. Foundry stocks are believed to be low and it is anticipated that the domestic demand may have an effect on foundry prices.

Furnace Coke Firmer

New York, July 10.—Curtailment of production at some of the coke furnaces in western Pennsylvania has resulted in firming up the price of medium sulphur and standard furnace coke. For so-called medium sulphur coke, which recently was being sold as low as $3.25, Connellsville, the minimum now is $4. It is difficult to buy standard furnace coke for spot shipment at less than $5, Connellsville. On foundry coke, however, the market is unchanged, and may be quoted at $5.50 to $6.50, Connellsville, for spot standard fuel, depending on the brand. For seaboard by-product foundry coke the market continues at $11.34 to $11.41, delivered at Newark and other northern New Jersey consuming points.

By-Product Coke Reduced

Cincinnati, O., July 10.—Coke prices continue downward as the result of a light demand. While the movement of furnace coke is slow, sellers report the foundry grade is in better demand than a week ago. Rogers, Brown & Co, distributors of Terre Haute by-product coke has announced a reduction of $1 a ton. The producer of Keystone coke has reduced the quotation on the foundry grade 50 cents a ton, making the price $7 in open top cars and $7.25 in box cars. The Domhoff & Joyce Co., distributor of Indianapolis by-product coke, also has announced a reduction of $1 a ton, making the quotation $13.40 delivered. New River coke is in fairly good demand, especially the foundry grade which is quoted at $11.50 to $12, ovens. The furnace grade ranges from $8 to $9 ovens. Pocahontas foundry coke can be had at $8.50 and the furnace grade at $7.50 for July shipment Producers are unwilling to accept orders for shipment beyond Aug. 1. Sales of Wise county foundry coke were made here during the past week at $7.25 ovens. The outstanding transactions of the week were the sale of 45 cars of New River foundry coke to a user in this district for third quarter and 12 cars of the same grade to an Indiana user. An Eastern Ohio buyer closed for 400 tons of Connellsville foundry coke for the last half.

Stocking Some By-Product Coke

St. Louis, July 10.—Aside from a slight stiffening in the better grades the coke market in this district is devoid of features of interest. Spot foundry coke is being freely offered by Connellsville makers at $5.75 to $6, while $6.25 to $7 can be done for the more distant deliveries. Deliveries from the eastern fields have been heavy, and some small resale lots have appeared here. Generally melters are well supplied. By-product interests continue to operate at capacity, and report that old orders are taking care of their current output.

Pig Iron Still Declines

(*Concluded from Page 77*)

offered on a basis of $29, Chicago, and concessions under that figure are being made. A round tonnage of No. 2 northern was reported as sold at $27.50, with the explanation that it was "distress" iron. No. 2 southern can be had in quantity at $25, and as low as $24 was done on several small lots. The leading local producer has reduced its quotation $1 a ton to $29 to $30 per ton, f.o.b. Granite City.

Eastern Sales Moderate

Philadelphia, July 10.—The principal pig iron business in the past week involved sales of several thousand tons of basic iron. The market for this grade is lower and it may be quoted at $27.25 to $28, delivered in this territory, depending on freight to the consuming point. Inquiries for several thousand tons of basic are pending. At least 1500 tons of copper-free, low-phorphorus iron was sold in the past week at prices equivalent to $34.79, delivered at Philadelphia. One eastern consumer inquired for 1000 tons of low phosphorus iron but withdrew the inquiry. Moderate tonnages of copper-bearing, low phosphorus iron have been sold at $32, furnace, which now indicates the market. Business in foundry iron continues of moderate proportions. New orders are considerably less than the output. The general market for eastern foundry iron now is $27, furnace, plus $1 silicon differentials, but this level has been shaded.

Southern Market Dull

Birmingham, Ala., July 9.—Little improvement is noted in the pig iron market in the South. Consumers urge delivery on contracts and there are practically no cancellations. Production has met with two obstacles, humidity resulting in the making of some off-grade iron and labor shortage. Stocks of iron, with off-grade iron included, have increased, more than 25,000 tons now being on furnace yards in this state. Reports are heard of delay being experienced in consumers getting iron due because of the output of off-grade material. New business continues slow and in small lots. Inquiries showed improvement in the week. Recent sales at $25 have led buyers generally to expect that or a better figure. The larger and more active companies, still quote $27. Charcoal iron is still dull and some stock is piling up at the plant of the Shelby Iron Co. The Tennessee Coal, Iron & Railroad Co. has blown out the Oxmoor furnace.

Buying Continues Slow

Chicago, July 10.—Buying of pig iron continues slow and practically on a spot basis. Little tonnage for delivery beyond July is on furnace books. The curtailment of production has begun by the blowing out of one Mayville, Wis., stack. Producers do not want to pile iron, and will shorten production if the melt continues to decline. Some resale iron is appearing though not in large tonnage. This has the effect of weakening the situation, though producers are not trying to meet resale prices. A further reduction in the past few days brings the market to $28 to $28.50, for foundry and malleable. Furnaces accumulated some stocks recently, but consumers have little iron on their yards and must buy further for August and September. A machinery builder with plants in Chicago and Indiana is inquiring for 3000 tons of malleable for the third quarter. A St. Louis melter is asking for 750 tons of malleable for third quarter. A northern melter wants 500 tons of malleable for prompt delivery and another is inquiring for 100 tons of malleable. Sales are small. They include 500 tons of foundry iron to a Wisconsin user; 300 tons to an Illinois melter and 250 tons to a Wisconsin buyer. Low phosphorus and Lake Superior charcoal irons are without feature and prices are unchanged. Silveries are dull. The sale of 600 tons to a Michigan foundry on a basis of $35.50, Jackson county, Mich., for electrolytic iron, has been noted here within the past few days.

Prices Present and Past

Representative market figures yesterday, and for last month, three months ago and one year ago

	July 11, 1923	June 1923	April 1923	July 1922
PIG IRON				
Bessemer, valley, del. Pitts....	$28.77	30.27	32.77	26.76
Basic, valley	25.00	27.35	31.00	26.76
*No. 2 foundry, del. Pittsburgh..	27.27	29.52	32.77	26.16
*No. 2 foundry, Chicago.....	28.50	31.50	32.50	24.65
Lake Superior charcoal, Chicago	36.65	36.65	36.55	31.65
Malleable, valley	25.50	28.25	31.00	25.00
Malleable, Chicago	28.50	31.50	32.50	24.65
*Southern No. 2, Birmingham..	25.00	26.75	27.00	18.50
*Southern Ohio, No. 2, Ironton..	27.00	28.25	31.00	24.15
Basic eastern del., eastern Pa..	27.50	28.14	30.75	26.00
**No. 2X, Virginia furnace ...	27.50	28.00	29.25	26.00
**No. 2X, Eastern del., Phila..	28.76	30.60	32.76	27.90
Gray forge, val. del. Pittsburgh	27.27	29.02	31.77	25.76
Ferromanganese, del. Pitts....	122.29	124.79	124.79	72.29
SEMIFINISHED MATERIAL				
Sheet bars, bessemer, Pittsburgh	42.50	42.90	45.85	35.00
Sheet bars, open-hearth, Pitts....	42.50	42.90	45.85	35.00
Billets, bessemer, Pittsburgh....	42.50	42.90	46.00	35.00
Billets, open-hearth, Pittsburgh..	42.50	42.90	46.00	35.00
FINISHED MATERIAL				
Steel bars, Pittsburgh.....	2.40	2.40	2.35	1.70
Steel bars, Chicago	2.50	2.50	2.43	1.75
Steel bars, Philadelphia.....	2.72	2.745	2.825	2.025

	July 11, 1923	June 1923	April 1923	July 1922
FINISHED MATERIAL (Continued)				
Iron bars, Philadelphia	$2.72	2.72	2.875	2.00
Iron bars, Chicago mills	2.50	2.60	2.60	1.80
Beams, Pittsburgh	2.50	2.50	2.45	1.70
Beams, Philadelphia	2.82	2.82	2.85	2.025
Beams, Chicago	2.60	2.60	2.53	1.75
Tank plates, Pittsburgh	2.50	2.50	2.45	1.70
Tank plates, Philadelphia	2.82	2.845	2.95	2.25
Tank plates, Chicago	2.60	2.60	2.55	1.75
Sheets, blk., No. 28, Pittsburgh.	3.85	3.85	3.85	3.15
Sheets, blue anl., No. 10, Pitts.	3.00	3.00	3.15	2.40
Sheets, galv., No. 28, Pittsburgh	5.00	5.00	5.00	4.15
Wire nails, Pittsburgh	3.00	3.00	3.00	2.40
COKE				
Connellsville furnace, ovens.....	4.50	4.65	6.25	10.65
Connellsville, foundry, ovens....	5.25	5.50	7.80	11.40
OLD MATERIAL				
Heavy melting steel, Pittsburgh..	18.50	20.50	25.85	16.60
Heavy melting steel, eastern Pa.	17.00	18.65	23.50	15.00
Heavy melting steel, Chicago...	17.00	17.75	22.40	15.15
No. 1 wrought, eastern Pa....	18.00	22.75	27.00	18.25
No. 1 wrought, Chicago	16.75	16.95	22.75	15.20
Rails for rolling, Chicago	18.50	19.40	23.65	16.00

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon

Composite Market Average

Representing the Combined Average Prices per Ton of Fourteen Leading Iron and Steel Products Yesterday, One Week, One Month, Three Months, One Year and Ten Years Ago

July 11, 1923	July 3, 1923	June, 1923	April, 1923	July, 1922	July, 1913
$45.49	$45.72	$46.46	$47.01	$37.50	$26.34

Products Included Are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

Iron and Steel Prices

SCRAP PRICES, PAGE 742, WAREHOUSE 134, ORE, NUTS, BOLTS AND RIVETS AND PIPE PRICES, PAGE 138

Pig Iron

Bessemer, valley	26.50 to 27.00
Bessemer, Pittsburgh	28.27 to 28.77
Basic, valley	25.00
Basic, Pittsburgh	26.77
Basic, Buffalo	26.50 to 27.00
Basic, del., eastern Pa.	27.25 to 28.00
Malleable, valley	25.50 to 26.00
Malleable, Pittsburgh	27.27 to 27.77
Malleable, Chicago	28.00 to 28.50
Malleable,, Buffalo	26.50 to 27.00
Malleable, del., eastern Pa.	28.75 to 29.25

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.23
No. 2 Southern foundry.	1.75 to 2.25
No. 2X East'n and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 to 3.25
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern del., Phila.	29.76 to 30.13
Nox. 1X Buffalo	27.50 to 28.00
No. 2 foundry, valley	25.50 to 26.00
No. 2 foundry, Pittsburgh	27.27 to 27.77
No. 2 foundry, Buffalo	26.50 to 27.00
No. 2 foundry, Chicago	28.00 to 28.50
No. 2 foundry, Granite City	29.00 to 30.00
No. 2 foundry, Ironton fur.	27.00 to 27.50
No. 2 foundry, Cleveland del.	27.27 to 28.50
No. 2 foundry, del. Phila.	27.76 to 28.13
No. 2 foundry, N. J. tidewater	28.13 to 28.63
No. 2X, eastern del., Phila.	28.76 to 29.13
No. 2X, east, N. J., tidewater	29.13 to 29.63
No. 2X, eastern del. Boston	**33.15 to 33.65**
No. 2X foundry, Buffalo fur.	27.00 to 27.50
No. 2X, Buffalo, del. Boston	**33.42 to 33.92**
No. 2 southern, Birmingham	25.00 to 27.00
No. 2 southern, Cincinnati	29.05 to 31.05
No. 2 southern, Chicago	31.01 to 33.01
No. 2 southern, Philadelphia	31.80 to 33.80
No. 2 southern, Cleveland	31.01 to 33.01
No. 2 southern, Boston (rail and water)	31.91 to 33.91
No. 2 southern, St. Louis	30.17 to 32.17
No. 2X, Virginia furnace	27.50
No. 2X, Virginia, Phila.	32.77
No. 2X, Virginia, Jersey City	33.04
No. 2X, Virginia, Boston	33.42
Gray forge, eastern Pa.	27.25 to 28.00
Gray forge, val., del., Pitts.	27.27
Low phos., standard, valley	35.00
Low phos., standard, Phila.	34.79
Low phos., Lebanon furnace.	32.00
Charcoal, Birmingham	34.00
Charcoal, Superior, Chicago.	**36.65**

Silvery Iron

Jackson County, Ohio, furnace

8 to 9 per cent	$38.50
9 to 10 per cent	40.50
10 to 11 per cent	42.50
11 to 12 per cent	45.50
12 per cent	47.50
13 per cent	50.00

Bessemer Ferrosilicon

Jackson County, Ohio, furnace

10 to 11 per cent	$47.50
11 to 12 per cent	50.80

Ferroalloys

†Ferromanganese 78 to 82 per cent,, tidewater, or furnace	117.50
Ferromanganese, delivered, Pittsburgh	122.29
Spiegeleisen 19 to 21 per cent furnace or tidewater	45.00
Ferrosilicon, 50 per cent contract freight allowed	87.50 to 92.50
Ferrotungsten standard, per pound contained	95.00
Ferrochrome, 60 to 70 chromium, 4 to 6 carbon per pound contained, delivered	12.00
Imported ferrochrome, 4 to 6 per cent carbon	nominal

†Duty paid.

Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	$3.50 to $4.00
Ferro carbon-titanium, carloads, producer's plant, per net ton	$200.00

Coke

Beehive, Ovens

Connellsville furnace	$4.50 to 5.00
Connellsvills foundry	5.25 to 6.50
New River furnace	8.00 to 9.00
New River foundry	11.50 to 13.00
Wise county furnace	**6.25 to 6.75**
Wise county foundry	7.25 to 7.75
Alabama furnace	**7.50 to 8.00**
Alabama foundry	8.00 to 9.00

By-Product

Foundry, Newark, N. J., del.	$11.34 to 11.41
Foundry, Chicago, ovens	13.50
Foundry, Boston, delivered	13.50
Foundry, Granite City, Ill.	**14.00**
Foundry, Alabama	8.00 to 9.00

Semifinished Material

BILLETS AND BLOOMS

4 x 4-inch base

Open-hearth, Pittsburgh	$42.50
Open-hearth, Youngstown	42.50
Open-hearth, Philadelphia	45.17 to 46.17
Bessemer, Pittsburgh	42.50
Bessemer, Youngstown	42.50
Forging, Pittsburgh	47.50 to 52.50
Forging, Philadelphia	55.17 to 57.17

SHEET BARS

Open-hearth, Pittsburgh	$42.50
Open-hearth, Youngstown	42.50
Bessemer, Pittsburgh	42.50
Bessemer, Youngstown	42.50

SLABS

Pittsburgh	$42.50
Youngstown	42.50

WIRE RODS

¼-inch and finer

Wire rods, Pittsburgh.....$51.00 to 52.50
Standard extras, $2.50 per ton over ¼ inch; $5 for screw stock; $15 for acid wire rods. Carbon extras, $3 for 0.20 to 0.40; $5 for 0.41 to 0.55; $7.50 for 0.56 to 0.75; $10 over 0.75.

SKELP

Grooved skelp, Pittsburgh	2.45c
Universal skelp, Pittsburgh	2.45c
Sheared skelp, Pittsburgh	2.45c

Shapes, Plates and Bars

Structural shapes, Pittsburgh	**2.50c to 2.60c**
Structural shapes, Phila.	2.72c to 2.82c
Structural shapes, New York	2.74c to 2.84c
Structural shapes, Chicago	2.60c to 2.70c
Tank plates, Pittsburgh	2.50c
Tank plates, Philadelphia	2.82c
Tank plates, New York	2.84c
Tank plates, Chicago	**2.60c to 2.80c**
Bars, soft steel, Pittsburgh	2.40c
Bars, soft steel, Philadelphia	2.72c
Bars, soft steel, New York	2.74c
Bars, soft steel, Chicago	**2.50c to 2.60c**
Bars, refined iron, Pittsburgh	3.25c to 5.00c
Bars, rail steel, Chicago	2.30c
Reinforcing bars, Pittsburgh.	2.30c to 2.40c
Bar iron, common, Phila.	2.72c
Bar iron, common, New York	2.74c
Bar iron, common, Chicago	2.50c to 2.60c
Bars, forging quality, Pitts.	**2.65c**

Hoops, Bands, Shafting

Hoops, Pittsburgh, large	3.15c to 3.30c
Hoops, Pittsburgh, small	3.50c to 3.75c
Bands, Pittsburgh	3.15c to 3.30c
Cold finished steel bars, Pittsburgh base	3.25c
Steel shafting, Pittsburgh	3.25c
Cotton ties, bundle 45 lb. Pittsburgh	$1.61

Rails, Track Material

Standard bessemer rails, mill	$43.00
Standard open-hearth rails, mill	43.00
Relaying rails, St. Louis	30.00 to 35.00
Relaying rails, Pittsburgh	30.00 to 34.00
Light rails, 25 to 45, mill	2.25c
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	3.15c
Spikes, small railroad, Pitts.	3.75c
Spikes, boat and barge, Pitts.	3.50c to 3.75c
Spikes, railroad, Chicago	3.25c
Track bolts, Pitts. Standard	4.00c
Track bolts, Pitts., small	5.00c to 5.50c
Track bolts, Chicago	4.25c
Tie plates, Pittsburgh	2.60c to 2.75c
Tie plates, Chicago	2.60c

Spike, tie plate and track bolt prices for carlots.

Wire Products

To Jobbers in Carloads

Wire nails, Pittsburgh	3.00c
Plain wire, Pittsburgh	2.75c
Annealed wire, Pittsburgh	2.90c
Galvanized wire, No. 9 gage, Pittsburgh	3.35c
Barbed wire, painted, Pitts.	3.45c
Barbed wire, galv., Pitts.	3.80c
Polished staples Pittsburgh	3.45c
Galvanized staples Pittsburgh	3.80c
Coated nails, count keg, Pitts.	2.70c
Woven wire fencing (retailers)	.65 off
Woven wire fencing (jobbers)	.67½ off

Chain, Piling, Strip Steel

Chain, 1-in. proof coil, Pitts.	6.50c
Sheet piling base, Pittsburgh	2.55c
Hot rolled strip steel, Pittsburgh stamping quality	3.15c to 3.30c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, 0.100-inch and heavier, base	5.00c to 5.25c

Sheets

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	3.85c
No. 28, bessemer, Pitts.	3.85c
No. 28, open-hearth, Phila.	4.07c to 4.17c
No. 28, open-hearth, Chicago.	**4.19c**

TIN MILL, BLACK

No. 28, open-hearth, Pitts.	**3.85c**
No. 28, open-hearth, Chicago.	**3.84c to 4.34c**

GALVANIZED

No. 28, open-hearth, Pitts.	5.00c
No. 28 bessemer, Pittsburgh.	5.00c
No. 28, open-hearth, Phila.	5.32c
No. 28, open-hearth, Chicago	**5.34c**

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.00c to 3.25c
No. 10, bessemer, Pittsburgh	3.00c to 3.25c
No. 10, open-hearth, Phila.	3.32c
No. 10, open-hearth, Chicago	**3.34c**

AUTOMOBILE SHEETS

No. 22 Pittsburgh	5.35c

Tin Plate

Per 100 lb. box

Tin plate, coke base, Pitts.	$5.50 to $5.75

Iron and Steel Pipe

Base Discounts Pittsburgh to Jobbers in Carloads

	Black	Galv.
1 to 3-inch, butt steel	61 to 62	49½ to50½
1 to 1½-inch, butt iron	30	13

Boiler Tubes

Less Carload Discounts—Carloads 4 Points Additional

Steel 3¼ to 3¾-inch	38½
Charcoal iron, 3¼ to 4½-inch	5
Seamless hot rolled, 3½ to 3¾-inch	35

Cast Iron Water Pipe

Class B Pipe

Four-inch, Chicago	63.20 to 65.20
Six-inch and over, Chicago	59.20 to 61.20
Three-inch, Birmingham	59.00 to 60.00
Four-inch, Birmingham	53.00 to 54.00
Six-inch and over, Birmingham	49.00 to 50.00
Four-inch, New York	63.60 to 65.50
Six-inch and over, New York	59.00 to 60.00

Standard fittings, Birmingham, base..$110.00
6 to 24-inch, base; over 24-inch, plus $20; 4 inch, plus $20; 3 inch, plus $20; gas pipe fittings, $5 higher.
Class A pipe is $5 higher than Class B.

Scrap Buying Still Small

Consumers Continue To Limit Purchases to Needs and Sales Are Small—Prices Continue Decline—Railroad Offerings Larger

SCRAP PRICES, PAGE 142

Chicago, July 10.—Although signs have indicated during the past few weeks that the scrap market was nearing a bottom and might be expected to rebound, some further decline has been made during the past few days. Heavy melting steel now is quoted $17 to $17.50, a decline of 50 cents. This represents the slackness due to buyers staying out of the market. Consumers are not buying and at the same time dealers are not trying to force the market, the result being a quiet situation. Only an occasional carload or two is being sold. Scrap is considerably weaker in the East and operators having offices both East and West find they can obtain material much lower in the East than at Chicago. This condition probably is being reflected in the present weakness here. Railroad offerings are sufficient to meet all requirements and some unusually large tonnages recently sold have furnished a heavy supply. The Chicago, Milwaukee & St. Paul is offering 1500 tons, the Chicago Great Western 750 tons, the Union Pacific 500 tons and the Central of Georgia 660 tons.

Demand Is Listless

New York, July 10.—Listlessness continues to characterize the local scrap market. Consumers are buying from hand to mouth, and in the case of some grades at reduced figures. Wrought material took the severest drop during the past week. On wrought pipe there was a reduction of $1.50, and on city wrought and railroad wrought, there was a decline of $1. Borings and turnings and cast scrap also weakened, notwithstanding a scarcity in one or two grades, notably machinery cast. Heavy melting and No. 1 railroad steel, however, are unchanged. The leading eastern Pennsylvania consumer is still quoting $17, delivered Bethlehem, on the latter grade, a figure that has been holding for the past fortnight. Dealers are less optimistic over the immediate future than they were recently. Some look for little improvement before September.

Prices Still Declining

Philadelphia, July 10.—Iron and steel scrap prices registered a heavy decline during the past week. Demand is small and sales of heavy melting steel included several lots of several hundred tons each. The Pennsylvania railroad is taking bids this week on about 3000 tons of steel scrap in its Broad street train shed which recently was burned. This scrap must be dismantled.

Buying Necessary Tonnages

Pittsburgh, July 10.—Piecemeal buying persists in the scrap market, consumers only taking what they must. Consequently large sales are rare. The embargo against shipments into Monessen, Pa., was lifted July 9 and the Monessen, Pa., as well as Butler, Pa., consumers again have bought heavy melting steel, taking tonnages aggregating 2000 to 5000 tons each at an average price of $18.50. This brings about another 50-cent reduction in this grade, the market now being no higher than $18.50 to $19. While for one small lot $18 was paid, this is not a representative figure since as high as $19 was paid for the remainder, making the average around $18.50. The steel on recent railroad lists brought approximately $20.50 and the specialties around $22. These relatively high figures were paid by dealers to cover shorts and tonnages thus awarded are being applied against old orders. Another grade to be reduced on the basis of a small sale is cast iron borings which now are quoted at $15.50 to $16. Scrap demand has no life whatever and while it is expected many consumers cannot long postpone buying, these are not coming in with tonnage requirements sufficiently large to lend the market much strength.

Purchasing Still Deferred

Buffalo, July 10.—The consumers that were showing interest in the iron and steel scrap market have not yet purchased. They are expected to reenter the market shortly because they have been using considerable scrap tonnage since their last purchases about seven weeks ago. New York Central and Erie railroad lists which closed last week, are understood to have brought $20.50 to $21, valley. The prices have slumped off again in a nominal way.

Sales Are Limited

Boston, July 10.—Scrap is easier all around, but no business is being done at the lower quotations. Dealers report no sales of importance. They attribute the present slackness to overbuying in the past and partly to the labor situation. Many are not looking for much improvement for a month or so. Heavy melting steel is nominally $1 a ton lower at $12.50 to $13; steel rails are off $2, at $12.50 to $13. No. 1 railroad wrought is $15 to $16 off $1; yard wrought $12.50 to $13, down $1.50; machine shop turnings $10.50 to $11, against $11 to $11.25 a week ago, cast iron borings are off 50 cents. Railroad malleable is now $22 to $23, formerly $24 to $25.

Railroad Offerings Liberal

Cincinnati, July 10.—Liberal offerings by railroads, together with a light buying movement is responsible for the weakness in the iron and steel scrap market here. Considerable current business involves forced sales. Prices continue to sag and during the past week declined on an average of 50 cents a ton. July promises to be a dull month as a number of smaller mills and foundries will be closed at least half of the month for annual repairs or inventory. Dealers report consumers actually refuse to consider offerings at rock bottom prices. The Big Four railroad closed on a list during the past week in-

(Concluded on Page 94)

Ferro Reduced

To $117.50 By British Makers—Resale Lots Go At $118

FERROALLOY PRICES, PAGE 79

Philadelphia, July 10.—Agents of British producers today received cables authorizing them to reduce the price of British ferromanganese to $117.50, duty paid tidewater. This represents an official reduction of $7.50 per ton since the previous British quotation was $125, duty paid tidewater. The new price of $117.50 now represents the going market and domestic makers are expected to meet it. During the past week some resale lots were marketed at $118, duty paid tidewater. It is expected, however, the resale market now will go lower. Spiegeleisen is quoted at $45, furnace, for 20 per cent.

New Demand Is Light

New York, July 10.—Demand for ferromanganese is restricted to small lots for nearby shipment. Apparently this business is being satisfied by resale lots at around $120.

Spiegeleisen continues to be quoted at $45 to $47.50 furnace, for 20 per cent metal but only carload sales are reported.

New business in special ferroalloys used in automotive steels is light and specifications have decreased somewhat. A relatively good business is reported in the alloys used in high speed steel production, ferrotungsten and the tool steel grade of vanadium. Ferrochorme prices are being influenced downward by the declines in continental exchanges, though domestic makers have not altered their position. Most consumers are covered under contract for the year. Fifty per cent ferrosilicon is quoted $87.50 to $92.50, delivered; 4 to 6 per cent carbon ferrochrome, 11.50 to 12 cents a pound contained; ferrotungsten, 95 cents a pound contained; tungsten powder, $1 a pound; open-hearth grade ferrovanadium, $3.50, base; tool steel grades, $3.75 to $4 a pound contained; ferromolybdenum, standard, $2 a pound contained. Wolframite is quoted $8.25 to $8.50 a short ton unit; scheelite, $8.75 to $9; Indian chrome ore, $21, c.i.f. Atlantic port; Rhodesian chrome ore, $22 to $23; New Calendonian chrome ore, $24 to $25.

Market Is Featureless

Pittsburgh, July 10.—All ferroalloys are featureless and practically no new demand is developing. Ferroalloy consumers bought heavily earlier in the year, basing their purchases on contemplated 100 per cent operations. It has not been possible to achieve and sustain this rate; hence practically all users have alloy stocks on hand and they are not closing upon future needs. Consumption however, appears to be going ahead at a fair rate since all material on old orders is wanted shipped except in a few cases where suspensions have been issued.

The price on domestic ferromanganese is unchanged at $125, seaboard base, which level applied on a recent sale of some English material.

In spiegeleisen, interest too is low although one buyer has closed on a

single carload of 19 to 21 per cent material and plans to place shortly 100 tons monthly over the remainder of the year. Leading producers' prices still are unchanged at $45 to $47.50, furnace, for the 19 to 21 per cent grade, depending upon quality. The 16 to 19 per cent grade is quoted at $1 per ton less. Ferrosilicon, 50 per cent, is quoted at $87.50 freight allowed. This is about $5 under the high level of $92.50, at which price some contracts were taken for June-August delivery.

New Wire Orders

Lacking But Demand Better in West —Pressure for Deliveries Strong

WIRE PRICES, PAGE 78

Pittsburgh July 10.—That new demand and new specifications are somewhat lacking in the wire products industry is apparent. This usually is the case in the vacation season. The trade, however, is optimistic since pressure for delivery of orders against which specifications have been issued is heavy. Mills generally are filled up for 60 to 90 days ahead. At the present time shipments exceed incoming orders by a sizable margin but it is expected that by August or September a considerable buying movement will be under way which will tax the capacity of the mills. Fairly large orders are on the books for cement-coated nails although new requirements are not developing. At the moment no demand exists for fencing. Price bases are unchanged at 2.75c for plain wire and 3.00c for wire nails.

Better Demand in West

Chicago, July 10.—After something of a lull in demand for wire and nails the situation has been stronger the past few days and increased buying has been evident in practically all lines. Prices are steady. Production has not changed materially and mills are able to turn out about 80 per cent of their capacity. This is not sufficient to meet needs of users and every effort is being made constantly to obtain larger shipments. This is the annual dull season for wire mills but business is keeping up at a better rate than usual. Demand for nails is especially heavy, particularly in manufacturing, which more than makes up for whatever lack there may be in the agricultural regions.

Shipments Are Behind

New York, July 10.—While as is usual at this time of the year shipments of wire and nails continue considerably in excess of new orders, the fundamental conditions in this market are very strong. The mills generally are three to four months behind their schedules and prices are firm at 2.75c base Pittsburgh for wire and 3.00c base Pittsburgh for nails. In some cases mills continue to obtain 3.10c for nails.

For the seven months ended April 30 of its fiscal year, the Laconia Car Co., Laconia, N. H., reports earnings of $137,000 after interest and charges and the outlook for the balance of the year is very promising. Net for the full previous fiscal year of 1922 was $131,725.

Semifinished Steel Dull

Offers of Sheet Bars at $42.50 Now Fail To Attract Customers— Hot Weather Interfering with Production

SEMIFINISHED STEEL PRICES, PAGE 79

Pittsburgh, July 10.—Demand for all forms of semifinished material is at a low ebb. A Sharon, Pa., consumer is understood to have closed recently on a fairly large tonnage of billets. Billet makers generally are quoting $42.50 on the 4x4-inch base size. In some cases they are waiving the differential between it and smaller billets, while others only are charging $1 extra for the smaller size instead of $2. Only one or two billet inquiries have been current in the last two weeks. Forging billets are being sold at below $50, Pittsburgh, one maker quoting that price having lost one lot of about 100 tons on the basis of $47.50. Numerous offerings of sheet bars, due to the shutdown of sheet and tin plate mills for repairs, meet with widespread indifference. Now that considerable material is available, buyers apparently do not want it. So far as can be substantiated, no sheet bar sales have been closed below $42.50, Pittsburgh or Youngstown. One or two buyers report they are able to obtain quotations of $40 and $41 but these have not been confirmed by sales. Numerous deliveries on sheet bar contracts were suspended before July 4.

The wire rod situation is unchanged. Some buyers would place tonnage if they could get satisfactory deliveries but most producers need all the wire rods they make, either to apply upon old orders or in their own conversion mills. Skelp is quotably unchanged at 2.45c, base Pittsburgh, with practically no market for the material, either sheared, grooved or universal.

Wire Rod Supply Easier

New York, July 10.—The supply of wire rods is much easier than two months ago. There now are enough rods to meet all requirements, though there does not seem to be any excess. The $51 Pittsburgh price prevails in practically all instances, and this figure is not being shaded.

Market Is Quiet

Cleveland, July 10.—There is a dearth of interest in sheet bars, billets and slabs, largely due to seasonal influences, and in view of liberal offerings at $42.50 the market is regarded as nominal at that figure. Prices have not been tested, while available tonnage has increased. Shipments continue in good volume, on contract. Some wire rods continue to be sold at $51 Pittsburgh.

Oversupply Is Averted

Youngstown, O., July 10.—Sheet bars were offered freely late last week on the basis of $42.50, Pittsburgh or Youngstown to a consumer in the Pittsburgh district whose opinion is that an attractive tonnage would bring out a lower figure. Inquiry in this district for semifinished material is lacking. While one producer is making no effort to solicit business it would show no hesitancy in taking on orders involving a few hundred ton lots at $42.50 Youngstown. This figure is the market in this district. Both producers here have good sheet bar contracts and report the release of specifications is sufficient to avert much of an excess supply.

Eastern Billet Demand Light

Philadelphia, July 10.—Billet demand continues limited to occasional small quantities, and now inquiries also are small. Prices are untested by real business. The current market continues quotable at $45.17 to $46.17, delivered at Philadelphia, for the rerolling grade and $55.17 to $57.17 delivered for forging quality. These figures probably could be shaded on attractive business.

Warehouse Demand Strong and Prices Hold

WAREHOUSE PRICES, PAGE 134

New York, July 10.—It is expected local warehouse interests will add the new mill extras to bar and small shape quotations. Base prices, however, are firm at the established levels and no changes are anticipated. With the exception of a few minor changes local warehouse prices have been firm for two months. While domestic demand is less active there still is a fairly large amount of business being placed. An interesting feature is an improved export demand, particularly from Porto Rico and Cuba, where the sugar interests and others are buying more actively than in many months.

Slight Drop in Demand

Philadelphia, July 10.—Demand for iron and steel out of stock continues to decline slightly and now appears around 75 to 80 per cent of the recent weekly average movement. Prices generally are unchanged.

Demand Continues Strong

Cleveland, July 10. — Local warehouse interests report there is practically no letup in demand for their products. The leading interest states that within the past few days it has noticed somewhat of an increase in demand. Base prices are steady but the leading interest has added the new extras on bars and small shapes.

Coke Plant Operates

Pittsburgh, July 10.—The Weirton Steel Co.'s new coke and by-product plant at Weirton, W. Va., was placed in operation midnight July 5 and the first coke was drawn July 6. The new plant will supply the company's Weirton and Steubenville mills and eliminate the long haul from the company's ovens at Brownsville, Pa. The plant consists of 37 ovens, is modern in every respect and has a carbonizing capacity of 1000 tons daily. A complete line of by-products will be produced. The new sheet mills, which are nearing completion, are to be placed in operation in August, according to present schedule.

Bar Deliveries Sought

Consumers Seeking To Hurry Shipments—Buying Is Checked Somewhat but Consumption Still Is Heavy—Some Prompt Tonnages Booked

BAR PRICES, PAGE 79

Chicago, July 10.—Almost universally consumers of soft steel bars are asking mills for better delivery, which shows that industrial activity is not being checked. This is especially true of manufacturers of shafting, rivets and bolts, all of whom produced more material during June than during April and May. While buying has been checked considerably, there is no tendency to lessening consumption and all contracts are being specified in full, no tonnage being allowed to lap over and be cancelled. Mills are able to make somewhat better delivery than formerly but even at the increased rate of production now prevailing it has not been possible to catch up with requirements. Quotations continue firm at 2.50c to 2.60c, Chicago mill. An eastern producer recently sold about 1000 tons of bars in the Chicago district at a premium over 2.40c, Pittsburgh, this being a small excess tonnage it was able to place with a western user.

Since producers of bar iron have had several mills closed the past 10 days, the usual midsummer vacation, tonnages on books have increased considerably. While demand is not active there is sufficient to assist in building up the total now under contract. While the market is quoted at 2.50c to 2.60c, Chicago mill, most of the business is going at the lower figure.

Producers of rail steel bars are in a comfortable position although demand is light and consumers are not anxious to take on further tonnage at present. The price is firm at 2.30c, mill.

Pennsylvania Buys 1500 Tons

Pittsburgh, July 10.—Numerous efforts to discover a price on merchant steel bars lower than 2.40c have been fruitless and recent buyers canvassing the market have finally closed at that figure where the delivery advantage was the greatest. Several users have closed on their third quarter requirements at the 2.40c price. The Pennsylvania railroad recently purchased about 1500 tons at that level. The new card of extras dated July 1 by the Carnegie Steel Co., as noted in IRON TRADE REVIEW of July 5, inaugurating increases of $1 to $20 per ton became effective on shipments July 5. A fairly steady demand exists for refined iron and a regular buying movement is expected to develop within a month or two. The price situation is unchanged, 3.25c to 5.00c base Pittsburgh, representing the full spread, based on the degree of refinement required.

Book for Early Shipment

Philadelphia, July 10.—Due to the continued lack of new business sufficient to replace steel bar shipments, some mills now are able to book for early delivery. At least two makers during the past week have been able to book orders for shipment in one to two weeks. The market is 2.40c Pittsburgh, or 2.72c, Philadelphia. This price is not being shaded, although premiums which recently were done have practically disappeared.

Automobile Output Keeps Up

Cleveland, July 10.—Producers report that their new tonnage of bars booked in this district so far in July slightly exceeds that taken in a similar period in June. The tonnage is not heavy, however, and is made up principally of filling-in requirements with occasional new needs. Parts buyers in this territory are not in the market very actively but reports from Detroit show that automobile production is holding up remarkably well. Such reduction of production as has been made has been confined to the smaller plants. The larger buyers have August schedules equal to or slightly in excess of their best recent records. Steel bar prices are firm at 2.40c, base, Pittsburgh. Irregularity has developed in wide strips, however, and one or two mills have gone as low as 2.75c, Pittsburgh. Other makers have been naming 3.15c to 3.30c, Pittsburgh. Large hoops and bands continue 3.15c to 3.30c, Pittsburgh, while hoops under 1-inch in width ind 20 gage thickness continue to command up to 3.50c.

Cold-Drawn Situation Unchanged

Pittsburgh, July 10.—Cold-drawn bar producers report no change in the general situation. The influx of orders still is considered good, many small orders being received with a fair sprinkling of large ones involving 200 or 300 tons at a time, all this business being done at the 3.25c, base Pittsburgh, level. The institution of new extras on the part of the hot-rolled bar producers adds to the cost and makes concessions from the 3.25c level on cold-drawn more remote than ever. Consumption is keeping fairly even with production but it is expected that when the midyear inventories are made up shortages will be discovered which will be followed by even larger purchases. Prompt deliveries can be made on most sizes although some of the smaller sizes are from 8 to 10 weeks deferred.

Bolt Buying Is of Fair Size; Rivets Shaded

NUT AND BOLT PRICES, PAGE 138

Pittsburgh, July 10.—Orders for nuts, bolts and rivets which are considered large for this season of the year, are a matter of daily receipt, and in some cases are coming in in practically every mail. Some of the larger makers are well filled up with business for two or three months ahead although deliveries of certain sizes can be made in much less time. New orders generally call for 25 to 100 tons apiece and mostly come from users such as railroads direct, jobbers not making much of an effort to replenish their stocks. This latter character of buying is expected to develop shortly however. Prices, except on rivets, are fairly firm on the basis of 50, 10 and 10 off for large machine bolts. In connection with rivets, some makers are not possessed of good order backlogs and consequently offer concessions. Thus, prices of 3.15c continue to appear on attractive business as against 3.25c and 3.35c, base Pittsburgh, respectively, the regular market prices.

Many Bolts on Contract

Chicago, July 10.—Practically all regular users of bolts and nuts have completed their contracts for third quarter requirements at about the same tonnage they have consumed in previous quarters. In addition to this considerable buying is being done. Prices are holding firmly at the schedule of discounts which prevailed for third quarter contracts.

Rivet Prices Shaded.

Cleveland, July 10.—Third quarter contracts for bolts and nuts being received by local producers call for fairly large quantities. Some spot business also is developing although it is understood this is not exceptionally large. Prices, which prevailed during the second quarter, are being quoted on all third quarter business.

Rivet prices are somewhat weaker shading of from $1 to $3 a ton being reported on spot tonnages. Orders for immediate delivery are scarce but a good volume of contract business is being placed at the prevailing prices of 3.25c and 3.35c Pittsburgh, for structural and boiler rivets respectively.

Rail Rates to Southern Points Are Revised

Pittsburgh, July 10.—Drastic revisions in freight rates on iron and steel from Pittsburgh, Buffalo and other northern points to the southeastern region as well as the Carolina and Mississippi river territories have been brought about by a recent ruling of the interstate commerce commission. This ruling sets aside the relief granted under the fourth section of the transportation act inaugurated some time ago to permit railroads to compete with water transportation to Cairo, Ill., Memphis, Tenn., New Orleans, La., Mobile, Ala., and elsewhere. This relief measure, withdrawn for the time being, brought about the charging of rates to various ports lower by a considerable margin than the rates to intermediate points not reached by barge deliveries. The new ruling specifically states that rates to the ports in question shall not be exceeded by rates to intermediate points. The new rates in the case of certain ports such as New Orleans, invite water competition in a way since rail and water combination rates through the port of New York can be worked out which will be lower than the new through-all-rail rate.

These revisions have been made to harmonize with the new class rates being inaugurated on southern lines to iron out irregularities of the past; that is, where the class rate between two given points has been raised or lowered a certain percentage, the rate

on commodities in the "special iron" list as it is called, has been changed in the same proportion. This special iron list includes finished steel in its various forms such as bars, plates, shapes, nails, wire, spikes, sheets, etc.

The new rates to Atlanta, Ga., and Birmingham, Ala., are lower than the old, but the new rates to Charlotte, N. C., Memphis, Tenn., New Orleans, La., Mobile, Ala., are higher than the old, so that the shippers who distribute their products well over the entire South offset the disadvantage of the higher rates with the lower ones. The comparative rates on finished iron and steel to southern points from Pittsburgh, Youngstown, Chicago and St. Louis in cents per 100 pounds follow:

From	Pittsburgh		Youngstown	
To	Old	New	Old	New
Bristol, Tenn.-Va.	47½	48	52	50
Knoxville, Tenn.	59	50	61½	50
Charlotte, N. C.	50½	51	52	53
Atlanta, Ga.	70½	58	72½	58
Montgomery, Ala.	69	62	71½	62
Memphis, Tenn.	38½	56	38½	54
Meridian, Miss.	70½	62	70	62
New Orleans, La.	51½	67	51½	66
From	Chicago		St. Louis	
To	Old	New	Old	New
Bristol, Tenn.-Va.	65	54	59	54
Knoxville, Tenn.	56½	50	50	46
Charlotte, N. C.	66	62	63	59
Atlanta, Ga.	67½	58	57	49
Montgomery, Ala.	62	57	51	49
Memphis, Tenn.	35	42	29½	35
Meridian, Miss.	43	53	38	46
New Orleans, La.	47½	57	41½	50

Similar rates from Buffalo to representative southern destinations are as follows:

South Eastern Territory	Old	New
Atlanta, Ga.	74	60
Birmingham, Ala.	69	60
Carolina Territory		
Charlotte, N. C.	52	53
Mississippi Territory		
Memphis, Tenn.	38½	58
New Orleans, La.	51½	68
Mobile, Ala.	51½	68

Hoop Makers Well Filled

HOOP PRICES, PAGE 79

Pittsburgh, July 10.—Producers of hoops and bands are filled up for several weeks to come; some have all they can roll in the third quarter. The general market is 3.15c to 3.30c, Pittsburgh, most independents adhering to the maximum. It is reported that around 3.00c and 3.05c have been done. In connection with small hoops, prices as high as 3.75c, again are being obtained, and thus the spread of 3.50c to 3.75c, base Pittsburgh, is re-instituted.

Wages Advanced in Tin and Sheet Mills

Youngstown, O., July 10.—As the result of the bi-monthly examination of sheet sales today wages of sheet and tin mill crews working under the agreement of the Amalgamated association will be increased 6 per cent to 43½ per cent above base rates, for July and August.

The average price of 26, 27 and 28 gage black sheets was found to have been 3.60c in May and June compared with 3.40c in the preceeding period. The volume of shipments was not as heavy. Under the 1923-24 wage agreement, tin workers' wages also are governed by the average sales price of black sheets. As a result, the average sales price of a base box of tin plate in May and June was not made public.

Plate Shipments Heavy

Users Specifying Good Tonnages, While New Business Falls Off—Some Tank Requirements Pending—Price Still 2.50c

PLATE PRICES, PAGE 79

Chicago, July 10.—Buying of oil storage tanks continues active and fabricators are seeking to place tonnages with plate mills to provide material for this class of work. Considerable secrecy is being maintained in some instances as to the builders of the tanks. The Petroleum Iron Works has inquired for 4000 tons of plates for immediate shipment for oil tanks. A fabricator at Chicago is asking for 10,000 tons of tank plates to cover construction it has undertaken for the present year. Car builders are taking large plate tonnages on contracts placed with mills several months ago and are seeking to obtain further steel for early delivery. In the present sold up condition of steel mills it has not been possible to place further tonnages for some time. Plates are unchanged at 2.50c to 2.60c, Chicago mill, the latter figure applying on plates for delivery during fourth quarter.

Inquiries and Orders Numerous

Pittsburgh, July 10.—Numerous plate orders have been placed, while others are pending. Buyers and sellers report the market firm at 2.50c, base Pittsburgh. This reflects the recent activity in connection with tank placements brought about by the low prices in crude oil encouraging oil storage. No new tank awards, are noted here this week. Some of the tonnages involved either in recent orders or active inquiries are 800, 1100, 1300, 1500 or 2000 tons. An inquiry for 8000 tons was put out by the Treadwell Construction Co., this week. Practically all tank and barge builders buying in Pittsburgh and vicinity are in the market or recently have closed on their immediate requirements. The list includes the Phoenix Iron Works, Petroleum Iron Works, Youngstown Boiler & Tank Works, Midland Barge Co., and others. All are more concerned about deliveries than about price. Most tank builders can only offer six to eight weeks' delivery, whereas tanks usually are desired sooner. A local refiner has ordered recently for its stock, several 55,000-barrel tanks from a nearby fabricator. About 1500 tons of plates are involved.

More Boat Work Out

Cleveland, July 10.—More inquiry for new vessel construction continues to be received by lake yards and the total of prospective business of this kind now calls for 20,000 or 25,000 tons of steel. Some of these proposals have been under consideration for a number of weeks as previously reported. The Youngstown Boiler & Tank Co. has received an additional order for 30 55,000-barrel tanks from the Humphrey Pure Oil Co. calling for 5000 to 6000 tons additional, chiefly plates, and has placed this business with valley mills. This latest order increases to 50 the number of tanks recently taken by this builder from the same buyer. The Louisville & Nashville railroad is in the market for 440 tons of plates representing its August requirements. New business continues to be made up of small lots but the volume is well maintained on the basis of recent weeks though it is not heavy. Prices are firm at a minimum of 2.50c, Pittsburgh, for the larger producers and at 2.60c, mill or Pittsburgh, depending upon destination, for Eastern and smaller mills.

Specifications Heavy

Philadelphia, July 10.—New plate business continues to fall off, and current buying is of a scattered character, forming a small total. The entire trade now looks for a continuation of the lull for the next few weeks, with improvement the latter part of August or in September. Despite lack of new demand heavy specifications are being made on third quarter contracts. Eastern mills generally continue to operate at 80 to 100 per cent of capacity. They are replacing shipments generally at the rate of 85 per cent, which is considered a good showing. Most eastern mills have enough work for six or eight weeks at capacity, while at least one eastern maker is unable to promise delivery under four to six weeks. The market continues firm at 2.50c, Pittsburgh, equivalent to 2.82c Philadelphia and apparently there is no shading. Included in current inquiry is a considerable tonnage for oil tanks. Further railroad plate tonnage was placed in the past week.

Unfilled Tonnage Drops

Unfilled tonnage on the books of the United States Steel Corp., as of June 30 totaled 6,386,261 tons. This is a decrease of 595,090 tons compared with the preceding month. The decline is due to the slowing up of new business, although to some extent it shows the heavy volume of shipments from mill during June. Comparisons follow:

Date	Total	Change, tonnage	Change, per cent	
June 30, 1923	6,386,261	595,090	— 0.08	—
May 31, 1923	6,981,351	307,158	— 4.21	—
Apr. 30, 1923	7,288,509	114,823	— 1.5	—
Mar. 31, 1923	7,403,332	119,343	+ 1.63	+
Feb. 28, 1923	7,283,989	373,213	+ 5.40	+
Jan. 31, 1923	6,910,776	165,073	+ 2.31	+
Dec. 31, 1922	6,745,703	94,539	— 1.39	—
Nov. 30, 1922	6,840,242	62,045	— .89	—
Oct. 31, 1922	6,902,287	210,680	+ 3.14	+
Sept. 30, 1922	6,691,607	741,502	+12.4	+
Aug. 31, 1922	5,950,105	173,944	+ 3.01	+
July 31, 1922	5,776,161	140,630	+ 2.48	+
June 30, 1922	5,635,531	381,303	+ 7.2	+
May 31, 1922	5,254,228	157,311	+ 3.08	+
April 30, 1922	5,096,917	602,769	+13.4	+
Mar. 31, 1922	4,494,148	353,079	+ 8.5	+
Feb. 28, 1922	4,141,069	100,609	— 2.307	—
Jan. 31, 1922	4,241,678	26,736	— 0.0062	—
Dec. 31, 1921	4,268,414	17,872	+ 0.004	+
Nov. 30, 1921	4,250,542	36,287	— 0.84	—
Oct. 31, 1921	4,286,829	273,841	— 6.004	—
Sept. 30, 1921	4,560,670	28,744	+ 0.63	+

Appointed Sales Agent

Philadelphia, July 10.—Park & Williams, Inc., has been appointed exclusive sales agent in the Eastern and New England districts for Reusens, Va., pig iron of E. J. Lavina & Co. The latter company has decided on a policy of making foundry iron available at all times.

Concrete Continues Dull

Reinforcing Bar Awards for Week Increase but New Inquiry Shows Decided Slump—Few Large Projects Now Up for Figures

REINFORCING BAR PRICES, PAGE 79

New York, July 10.—Despite the great falling off in demand for concrete bars of late, due not only to the seasonal letup but also to the numerous discouragements which have hindered new building lately, the market on concrete reinforcing bars is not being shaded as far as known. On bars rolled from new billets, the minimum for mill shipment is 2.40c, base Pittsburgh, or 2.74c, delivered New York. Bars rerolled from old axles have been quoted at 2.30c, base Pittsburgh. On bars for shipment out of warehouse, the current market continues at 2.75c to 3c, base Pittsburgh, depending on the size of the order.

Several Awards Expected Soon

Washington, July 10.—Two contracts for concrete bars, aggregating about 250 tons, are about to be closed. Other than this the reinforcing bar market in this vicinity is quiet. Office building and apartment construction now offer the only outlet for concrete bars in the Washington district, as there is practically no industrial construction. Activity along these lines is at the lowest ebb in some months. New steel bars are quoted 3.50c to 3.75c, Washington warehouse.

One 700-ton Lot Let

Pittsburgh, July 10.—Relatively unimportant tonnages are for the most part involved in the concrete bar transactions which have come to the closing point this past week. It is reported, however, that the Dravo Contracting Co., Pittsburgh, has been awarded the Bessemer & Lake Erie railroad dock at Conneaut, O., which takes 700 tons. Other awards run from 25 to 50 tons each. From 2.55c to 2.75c still is quoted by concrete bar fabricators on bars out of stock; mill prices are unchanged at 2.40c, base Pittsburgh. Rerolled bars are 2.35c, mill, and this figure is being shaded on occasion.

Large Tonnages Placed

Detroit, July 10.—Revised figures of the Book hotel for reinforcing bars brings the total to 630 tons. This contract has been awarded to the Truscon Steel Co. The revision of figures is due to the decision of the company to add five additional stories to the building, making it 26 stories. The concrete Steel Fireproofing Co. of this city has been awarded 830 tons for seven buildings for the city of Detroit. This contract was let last week.

Reinforcing bar awards recently have been only of fair volume. Many jobs are in prospect and dealers in reinforcing bars say this prospective business will total several thousand tons. Prices on reinforcing bars are holding steady. The inquiry at this time of the year is larger than in previous years.

Inquiry Again Takes Slump

Cleveland, July 10.—Inquiry for reinforcing bars in this district fell off again during the past week, no new projects of any size being brought out. In the smaller lots, of from 10 to 25 tons, the slump was more noticeable, this business having maintained strength during the recent lull in larger sized tonnages. The lettings were restricted to a 140-ton warehouse job for the Stacey Co., Cincinnati, the business going to Bourne-Fuller Co. Although not definitely awarded, it is understood that the Concrete Reinforcing Engineering Co. will receive the contract for supplying 300 tons needed in the Cleveland public library, the plans calling for the specially made bars of that company. No weakening in new steel bars, at 2.40c, base Pittsburgh, is noted. On rerolled there is some tendency to shade 2.35c, mill. As low as 2.30c, mill, has been quoted on this business by several mills.

Bar Sales Continue Large

Chicago, July 10.—With much prospective business in reinforced concrete, selling of reinforcing bars keeps up at a better rate than had been expected. In addition to the large total of small tonnages being taken by all sellers, each week sees a comfortable number of larger tonnages being placed. Deliveries of bars from mills are improving considerably and most sellers are now in a position to handle as much business as offered. Prospects are for a steady volume of buying throughout the building season and no sign of a recession has appeared. The quotation continues steady at 3.15c, Chicago warehouse, and no tendency is shown by western sellers to shade this figure.

CONCRETE CONTRACTS PLACED

Awards this week.....11,050 tons
Awards last week..... 2,070 tons
Awards two weeks ago..... 1,745 tons

1400 tons, hospital, Rochester, N. Y., to Corrugated Bar Co.
1300 tons, medical school and hospital for University of Rochester, Rochester, N. Y., to Corrugated Bar Co.
830 tons, sewer work for city of Detroit, to Concrete Steel Fireproofing Co.
825 tons, Conners Creek sewer, Detroit, to Concrete Steel Co.
750 tons, Montgomery Ward Bldg., Oakland, Cal., to Truscon Steel Co.
700 tons, Central Mfg. District building, Los Angeles, previously reported as having gone 500 tons to Pacific Coast Steel., to Badt-Falk Co.
700 tons, road work near Hackettstown, N. J., to Kalman Steel Co.
700 tons, addition to plant of Stewart-Warner Co., Chicago, to Barton Spiderweb System.
630 tons, Book hotel, Detroit, to Truscon Steel Co.
600 tons, stadium for University of California, Berkeley, Cal., to Badt-Falk Co.
500 tons, power plant at South Bend, Ind., to Kalman Steel Co.
450 tons, building for New York Telephone Co., New York, to Concrete Steel Co.
400 tons, May warehouse, Los Angeles, to Truscon Steel Co.
400 tons, loft building, Eighth and Olive streets, Los Angeles, to Badt-Falk Co.
315 tons, Sisters hospital, Sacramento, Cal. to Truscon Steel Co.
210 tons, city hall, Stockton, Cal., to Gunn, Carle & Co.
140 tons, warehouse for Stacey Co., Cincinnati, to Bourne-Fuller Co.
100 tons, highway bridges in Illinois, to Kalman Steel Co.
100 tons, Lindenwood terminal, St. Louis & San Francisco railroad, St. Louis, to Truscon Steel Co.
100 tons, Rosseau building, Market and Seventh streets, San Francisco, to Gunn, Carle & Co.
100 tons, St. Dommick's church, San Francisco, to Gunn, Carle & Co.
100 tons, warehouse for Lindley Co., for Sacramento, Cal., to Badt-Falk Co.
100 tons, three bridges for highway commission, Portland, Oregon, to unknown jobber.
100 tons, Prescott-White Forest Highway commission, Phoenix, Ariz., to unknown jobber.

CONCRETE CONTRACTS PENDING

700 tons, Bessemer & Lake Erie dock at Conneaut, O., reported placed with the Dravo Contracting Co., general contractors.
620 tons, contract No. 2, San Diego, Cal., Harbor commission; bids taken July 11.
138 tons, bridge at Crystal Spring Dam, Cal., for California highway commission; bids taken.

Pipe Deliveries

Still Are Sought—Makers Booked Heavily Ahead

PIPE PRICES, PAGE 79 AND 138

Pittsburgh, July 10.—Pipe mills have considerable business on hand for two or three months to come and even should new demand suddenly cease mill activity will proceed upon a good basis for the remainder of the year. It will take several months to discharge present obligations. Jobbers are bringing pressure to bear to increase their tonnage receipts and this applies to standard full weight merchant pipe as well as to all country goods. Notwithstanding reports to the contrary many oil fields are not curtailing their drilling activity to any great extent which is borne out by the fact they keep up a constant bombardment upon the mills for tubular goods. Most requests are for shipment on old orders and some suspension of a few weeks ago have been reinstated. A few cancellations made several weeks ago of tonnage on pipe mill books for a long time are being reinstated but only at the new price levels of April 19, 1923. While one or two tentative inquiries for line pipe involving 7000 or 8000 tons each continue to appear from time to time, not many such are being closed, the last one of size being a gas line for Calgary, Alberta, Canada, 250 miles of 4 and 6-inch, approximately 25,000 tons. This tonnage was divided among British and American makers, a mill in Pittsburgh and one in Youngstown taking about one-third of the tonnage. The South Penn Oil Co. now is in the market for 31,000 feet, about six miles, of 8-inch plain-end pipe and this is a typical inquiry as to tonnage at the present time.

Demand Light, Shops Full

Chicago, July 10.—In keeping with the season, demand for cast iron pipe is light and relatively little inquiry is current. Shops have plenty of business on books and are in a comfortable situation. Sufficient small business comes in without bidding practically to equal production and hold the backlog steady. Prices are firm and 4-inch is now quoted at nothing lower than $53, Birmingham, with 6-inch and larger at $51, although 10-inch and larger has com-

manded as low as $49, Birmingham, in some recent lettings. This is because shops are more in need of large pipe to balance production.

Trading Is Restricted

New York, July 10.—Trading in cast iron pipe continues restricted, but with virtually all pipe shops in this district sold ahead three to four months, prices are steady. The labor situation at some of the shops is better. In one instance a pipemaker which until recently could operate little better than 60 to 65 per cent can now run around 80 per cent.

Few More Lettings Reported

Birmingham, Ala., July 9.—Cast iron pipe plants in the Birmingham district are producing steadily. Numerous small lettings continue to come in, all three pressure pipe makers getting a share. little pipe is accumulating on yards. Labor supply is limited. No protest is yet publicly announced on the proposed advance in water rates from southern or gulf ports to Pacific Coast ports, scheduled for August 1.

Tin Plate

Still In Heavy Demand Despite Large First Half Shipments

TIN PLATE PRICES, PAGE 79

Pittsburgh, July 10.—Although more tin plate was shipped by the American Sheet & Tin Plate Co. during the first six months of 1923 than in any first half of its history, its customers still are unsatisfied. Some independent producers report similar conditions. Theoretically, tin plate business is in better shape than it ever has been, but actually it is not in satisfactory shape since makers are subjected to so much undesirable driving for deliveries, etc.

Can makers demands are far from being satisfied, notwithstanding each received his pro rata share of the increased output. At present the steel supply is good and transportation is all that can be desired, leaving only the lack of labor as a hindrance. Because deliveries of material on contracts necessarily are deferred in many cases, buyers have put out new inquiries on which prompt shipments are requested. These usually involve around 50,000 base boxes, one such tonnage for oil cans being circulated this week. Since practically all independent makers have all the business they can handle, it is only with considerable difficulty that such requirements are placed. The price is unchanged at $5.50 per base box, 100 pounds, Pittsburgh, although occasionally $5.75 is obtained in isolated cases.

New Inquiry Issued

New York, July 10.—The Nippon Oil Co. definitely has dropped its recent inquiry for 37,500 boxes of tin plate and now is taking prices on a new inquiry for 20,000 boxes.

Ignatz Weiskopf has been appointed trustee of the bankrupt estate of the Badger Metal Ware Co., Milwaukee, which recently filed a voluntary petition in bankruptcy. The nominal value of the assets was placed at $83,000 while liabilities were listed at $35,000.

New Sheet Sales Lacking

Market Is Quiet, as Motorcar Builders Work on New Models—Some Black Tonnage Sold from Stock at 3.75c—Output Lower

SHEET PRICES, PAGE 79

Pittsburgh, July 10.—Independent sheet mills still are suffering from lack of operations due to the holidays and shutdowns for repairs. The American Sheet & Tin Plate Co. did not shut down for repairs, but its operations have been reduced on account of the absence of hot mill workmen. The reduction in its general average amounted to something like 10 or 12 per cent. It has inaugurated a 10 per cent advance in hot mill wages but in common with other hot mill operators it will not be able to maintain anything like normal operations until September or October, due to the inadequacy of the labor supply. This latter factor is practically the only hampering influence at the present time, both steel supplies and transportation being up to requirements. Some of the independent sheet producers will resume operations at the end of the present week or the beginning of next; a few will be shut down for a longer period. A thorough canvass of the situation reveals no price cutting in this district on black sheets, refuting newspaper reports to the effect that a 3.75c price instead of the market price of 3.85c was prevalent in both Pittsburgh and Youngstown, O., territories. Customers are not suspending shipments except in one or two minor instances. Most of them are asking for more prompt and larger deliveries and say nothing about the matter of price. Demand for galvanized sheets still is heavy and the 5.00c price is firm. Blue annealed is quoted at 3.00c to 3.25c, base Pittsburgh, and some sheet buyers recently have endeavored to increase their orders for the third quarter without success. Two or three suspensions still are in force from users of automobile sheets. The Ford, Chevrolet, Dodge, Willys-Overland, Studebaker and other motor companies all plan production for July and August comparable with their high attainment in June. Full-finished automobile sheets are quotably unchanged at 5.35c, base Pittsburgh.

Sales Less Than Output

Philadelphia, July 10.—While specifications on sheet contracts are heavy, new business is small. The aggregate is considerably less than current production. This is particularly true of black sheets, which now reflects some weakness and are easy to buy at 3.75c, Pittsburgh, equivalent to 4.07c, delivered at Philadelphia. Blue annealed and galvanized sheets continue firmly maintained at 3.00c and 5.00c, Pittsburgh, respectively.

Black Sheets Sold at 3.75c

Youngstown, O., July 10.—While sheet specifications are being issued right along, the volume of new business coming out is not large and the market generally is considered dull. The shutdown of the hot mills throughout the district during the first week of July did not build up backlogs to any marked extent which is attributed to the fact that shipments have been made according to schedule for the past six weeks and that little new business can be expected during the summer months. Automobile consumers are making patterns and dies for 1924 models and are taking inventory and until this is cleared away producers of sheets do not look for much business from that direction. Blue annealed is the strongest of the three grades from the standpoint of demand, followed by galvanized and black. Prices are firm on production tonnage. Blue annealed is 3.00c; galvanized 5.00c, and black 3.85c, base, Pittsburgh. Where a mill finds it necessary to make a quick cleanup of black sheets on warehouse floor consisting of lots of miscellaneous sizes, the price of 3.75c, Pittsburgh is noted, and some tonnage has been moved on this basis from at least two mills in this district over the week. Black sheets for production, however, are firm at 3.85c. The quantity of sheets listed on stock sheets in distribution is not large for any particular size. High-grade sheets for third quarter shipment are firm in this district at 5.35c, Pittsburgh, with some producers having sufficient tonnage on their books to warrant operation into early September. One producer outside this district is reported to be offering high-grade tonnage at 4.85c, Pittsburgh, although this rumor could not be substantiated.

Users Need More Tonnage

Chicago, July 10.—Weak spots that may have existed in the market for steel sheets have disappeared and rumors of prices being shaded are no longer heard. As far as can be learned all sheet mills are holding to the schedule which has been adhered to by most makers for several weeks. Some resale galvanized sheets have made their appearance in the East at concessions, but supply has not been sufficient to affect the market here. Hot weather is cutting down production and an important producer is unable to maintain better than 65 per cent of capacity for that reason. Producers at Chicago are unable to take on further tonnage for third quarter and are not yet willing to sell for fourth quarter. Consumers are pressing mills diligently to expedite their shipments and are willing to take in as much tonnage as is able to be furnished them.

Build Washing Plant for Manganese Ore

The American Manganese Co. has about completed construction of a $50,000 washing plant at Batesville, Ark., which will handle 1000 tons of earth a day. J. S. Edmundson, formerly with the Alabama Consolidated tendent of the Manistique plant, Charcoal Iron Co. of America, is in charge of construction. The American company own about 1400 acres of manganese lands in the Batesville district. The plant is connected with different properties of the company by a new railroad.

Structural Sales Lag

Small Tonnage Inquiries Predominate—Ford Motor Co. Plant at St. Paul To Need 7500 Tons—Building Holding Up Well in West

STRUCTURAL SHAPE PRICES, PAGE 79

New York, July 10.—Structural activity, while still restricted, involves several substantial inquiries. Possibly the largest is that of the Western Electric Co., calling for 2000 tons for the first unit of its proposed plant at Kearney, N. J. Notwithstanding a few scattered instances of shading, the tonnages involved were relatively small, and the plain material market may be quoted substantially unchanged at 2.50c, base Pittsburgh. The market on erected material is also practically unchanged, with lofts holding at $105 to $110, erected; office buildings, $115 to $120; and apartments, $125 to $130. On good-sized tonnages of assorted specifications, the mills can not do much better than seven to eight weeks, with some booked further ahead, and the fabricating shops, on an average, are quoting around 10 to 12 weeks.

Small Tonnage Inquiries Predominate

Pittsburgh, July 10.—Inquiries are numerous for structural shapes for various small jobs in this and nearby vicinities although large awards recently have been few and far between. All fabricators report the receipt of a fair number of small 50 to 100-ton contracts, and state that many of the larger projects still are deferred. The price insofar as this district is concerned is firm at 2.50c, base Pittsburgh, no concessions under that level being available. Customers chiefly are concerned about the matter of deliveries, and while reports of a 2.40c price are current as having been made in the eastern district, naturally make them hesitate, they undoubtedly would willingly pay the 2.50c price if the desired deliveries could be procured.

Building Holds Up Well

Chicago, July 10.—Construction work in the West has shown no decided slump and new projects coming out constantly tend to keep the situation active. Bids have been asked for July 12 on about 7500 tons of structural shapes and plates for the new plant of the Ford Motor Co. at St. Paul. Lettings during the past week have been more numerous than for some time, although most of them are for relatively small tonnages. Plain material is unchanged in this market at 2.60c to 2.70c, Chicago mill.

Heavy Building Activity in Prospect

Cleveland, July 10.—Building plans now under consideration or about to be started promise heavy lettings of structural shapes in the near future. Among the larger jobs receiving attention at this time are those of the Allerton hotel, Cleveland, requiring 1500 tons. The contract for this steel is expected to be let within another week by Crowell & Little, general contractors. The Superior hotel project will need approximately 3000 tons. Several other buildings include a bachelor hotel on East Twentieth street, and an office and apartment buildings, these two requiring smaller tonnages. The general contract for the new Neil house, Columbus, O., requiring 5000 tons of strutural shapes, was let during the week to Wells Bros. Construction Co., Chicago. The steel will be refigured for this job, the contract originally placed with the Mt. Vernon Bridge Co. in March having been cancelled. On plain material 2.50c, base Pittsburgh, is holding steady. Mill deliveries, better because of the letup in demand, are still protracted to from three to five months in many cases.

New Shape Business Small

Philadelphia, July 10.—New structural shape business during the past week was exceptionally small, but some improvement was noted in the last few days when one mill reported new bookings in excess of shipments. The market price continues generally at 2.50c, base Pittsburgh, equivalent to 2.82c, Philadelphia, although in some exceptional instances 2.40c, base Pittsburgh, is being done.

STRUCTURAL CONTRACTS PLACED	
Building awards this week.....	6,405 tons
Building awards last week.....	7,392 tons
Building awards two weeks ago..	8,737 tons

4000 tons, grain elevator for Montreal Harbor commission, to Vickers, Ltd.

1500 tons, bridge over Humber river, Quebec, Can., to Dominion Bridge Co.

800 tons, Shriners' Temple, Nashville, Tenn., to Hugger Brothers, Montgomery, Ala.

600 tons, Alameda County Title Ins. building, Oakland, Cal., to California Steel Co.

585 tons, addition to St. Francis hotel, San Francisco, to Dyer Bros. Structural Steel Co.

500 tons, Western Union building, New Orleans, to Virginia Bridge & Iron Works.

375 tons, span for Kansas, Oklahoma & Gulf railroad, to Wisconsin Bridge & Iron Co.

372 tons, six deck plate girder spans for Kansas, Oklahoma & Gulf railroad, to Wisconsin Bridge & Iron Co.

342 tons, 230-foot draw span over Fox river, between Green Bay and Fort Howard, Wisconsin, for Kewanee, Green Bay & Western railway, to Wisconsin Bridge & Iron Co.

324 tons, recreation building for the Culver Military Academy, Culver, Ind., to Fort Pitt Bridge Co.

300 tons, loft at Third avenue and Eighty-fifth street, New York, to Levering & Garrigues.

256 tons, one 90-foot span, one 26-foot span, three 75-foot spans and cast steel shoes for Missouri Pacific railroad, to American Bridge Co.

250 tons, office building, California and Sansome streets, San Francisco, to Ralston Iron Works.

250 tons, gas holder, Tacoma Gas & Fuel Co., Tacoma, Wash., to Stacey Mfg. Co.

240 tons, administration building, Central Mfg. District, Los Angeles, to unknown eastern fabricator.

205 tons, shop building for Western Pacific Railroad Co., Sacramento, Cal., to Union Construction Co.

200 tons, boiler supports for Devon, Connecticut, to Porcupine Bridge Works.

157 tons, engine house and machine shop for Central Vermont railroad, St. Albans, Vermont, to American Bridge Co.

157 tons, roof trusses for high school, Ely, Minn., to National Iron Co.

148 tons, 3 single deck plate girder spans for Pennsylvania system, Rosedale, Ind., to Bethlehem Seel Bridge Co.

144 tons, three 50-foot spans and two 71-foot spans for Missouri Pacific railway, to Virginia Bridge & Iron Co., and Mt. Vernon Bridge Co.

125 tons, two 140-footx20-foot skew truss highway spans for Mahaska County, Iowa, to unknown fabricator.

125 tons, forge shop for Nash Motors Co., Kenosha, Wis., to Milwaukee Bridge Co.

100 tons, bridge at Oleum, Cal., for Union Oil Co., to American Bridge Co.

100 tons, high school, Alhambra, Cal., to Union Iron Works.

Tonnage not stated, city auditorium, Birmingham, Ala., awarded to Nashville Bridge Co. Announced last week as awarded to unknown fabricator in Birmingham district.

STRUCTURAL CONTRACTS PENDING

7500 tons, plant for Ford Motor Co., St. Paul, Minn.; bids opened July 12.

7000 tons, hall of justice, Los Angeles; bids in.

5000 tons, new Neil house, Columbus; general contract, Wells Bros. Construction Co., Chicago. Steel work previously reported closed expected to be refigured.

2000 tons, clubhouse for Elks, Milwaukee; bids taken until July 14 by W. F. Eichfeld, 181 Second street, Milwaukee. All bids on original plans calling for 2615 tons of steel rejected.

2000 tons, first unit of new plant for Western Electric Co., at Kearney, N. J.; bids asked.

2000 tons, apartment for Bing & Bing, Park avenue, New York, pending.

1700 tons, building for General Electric Co., Philadelphia; general contract awarded to White Construction Co.

1500 tons, overhead crossing for Western Pacific railroad; bids being received.

1500 tons, powerhouse for Southern California Edison Co., Los Angeles; bids taken.

1500 tons, Allerton hotel, Cleveland; Crowell & Little Co., general contractors. Contract to be let within next week.

1300 tons, Bricken loft building, Thirty-eighth street, New York; award expected any day.

1000 tons, Elks club, San Francisco; bids asked.

900 tons, shop building for Baldwin Locomotive Works, Eddystone, Pa.; project temporarily withdrawn.

800 tons, type A school, New York; general contractors' bids closed July 6.

800 tons, station for New York Edison Co., Forty-first street and First avenue, New York; pending.

800 tons, public school No. 72, New York; new figures asked.

700 tons, apartment 760 Park avenue, New York; Garrett Brothers general contractors.

600 tons, new State street bascule bridge at Milwaukee; bids on general contract being taken until July 20 by department of public works.

600 tons, addition to Goerke department store, Newark, N. J.; bids asked.

500 tons California hotel, San Francisco; bids taken.

500 tons, two bridges, Everett, Wash., general contract to Union Bridge Co., steel not yet placed.

500 tons, apartment house, San Francisco; bids asked.

500 tons, ice plant, Bronx, New York; bids asked.

450 tons, bridge for Alaska Engineering commission; bids taken.

415 tons, two bridges for San Diego Electric Co., bids being received.

400 tons, addition to public school No. 32, New York; general contractors' bids just closed.

400 tons, tunnel for Pacific Gas & Electric Co., Pitt River, Cal., bids being received.

315 tons, bridge over Cape Fear river, Elizabethtown, N. C. for state highway commission; new bids asked.

200 to 500 tons, addition to National Bank of North Hudson, Hoboken, N. J.; pending.

200 tons, grade school, New Bruswick, N. J.; bids asked.

145 tons, paint shop for Central Railroad of Vermont, St. Albans, Vermont; the Arnold Co., Chicago, taking bids.

100 tons, steel towers for Gorge creek transmission line, Seattle; bids in. Low bid of $8960 for bolted and $8900 for riveted construction.

Unnamed tonnage, Presto building, Market street, Newark, N. J.; bids asked; Marshall N. Shoemaker, architect, in charge.

Strip Contracts Placed

STRIP PRICES, PAGE 79

Pittsburgh, July 10.—Contracts for third quarter requirements of both hot and cold-rolled strip steel have been consummated in a number of instances. These orders have come from diversified lines and compare favorably with second quarter shipments. A large number of strip steel users, however, as

yet are unprotected for their entire third quarter needs. Production temporarily is interfered with by shutdowns for repairs, etc. The Carnegie Steel Co., quotes 3.15c on hot rolled strips but independent producers generally are adhering to the 3.30c base Pittsburgh,level. The American Steel & Wire Co., quotes 5.00c on cold-rolled strips, but so far as can be learned, independents have yet to offer concessions under the 5.25c base Pittsburgh, level.

Ore Movement Double That in 1922

ORE PRICES, PAGE 138

Cleveland, July 10.—Receipts of iron ore at Lake Erie ports in June amounted to 7,173,028 tons, of the total of 9,499,501 tons shipped from the Lake Superior district by water in that month. The shipments to furnaces from Lake Erie ports in June totaled 5,590,611 tons. The receipts and shipments from these ports for the season of 1923 to date, with balances on dock, are as follows:

Buffalo and Port	Receipts	Shipments	Balance on dock
Colborne, Ont.	1,521,564	477,107	159,474
Erie	334,891	509,873	254,718
Conneaut	2,106,297	2,498,683	937,540
Ashtabula	2,820,080	3,427,752	1,005,030
Fairport	567,268	630,887	205,318
Cleveland	2,389,110	2,227,483	1,023,042
Lorain	874,377	764,812	211,958
Huron	301,275	505,578	579,522
Toledo	522,620	443,114	135,189
Total Lake Erie	11,537,482	11,485,289	4,511,791
Comparative total, year previous	5,203,205	4,620,188	6 753,991

Foreign Iron Ore Lower

New York, July 10.—Several small lots of foreign iron ore have been bought lately by eastern consumers at considerable concessions from the prices recently prevailing. The market on Spanish and Algerian low phosphorus ore ranging from 52 to 54 per cent metallic content now may be quoted at 9½ to 11 cents per unit, c.i.f. tidewater. Spanish ore for foundry or basic iron ranging from 50 to 54 per cent may be quoted at 8½ to 9½ cents per unit, c.i.f. tidewater.

Asking for Manganese Ore

New York, July 10.—Some inquiries for manganese ore have appeared lately, but no desire to purchase has been shown. The market on Indian manganese ore is regarded as around 42 cents a unit, c. i. f. tidewater. No quotations have been made recently on Brazilian or Caucasian ore. It is reported that European buyers have closed for considerable so-called Nikapole manganese ore from Southern Russia. This ore is high in silicon but otherwise standard. The price paid is said to have been equivalent to 42 cents a unit, c. i. f. Baltimore.

File Bankruptcy Plea

Philadelphia, July 10.—Creditors have filed a petition in bankruptcy against the Foley Steel Co., Philadelphia, operator of a puddling plant and bar mill at Slatington, Pa. The mill now is idle.

Roads Resume Car Buying

New York Central Railroad Places 1500—Rails Totaling 160,000 Tons Still Pending—Track Fastening Demand Is in Steady Volume

RAILROAD TRACK MATERIAL PRICES, PAGE 79

New York, July 10.—Involving 1785 freight cars, orders in June were the lightest since August, 1922, when 1610 cars were awarded. June's total was smaller than the 2200 cars ordered in May. Of last month's total, 1000 were for the Detroit, Toledo & Ironton railroad. Locomotive awards totaled 82, and passenger cars 102, as compared with 173 and 120, respectively, in the preceding month. Following is a comparative statement of car awards:

June	1,785
May	2,200
April	9,800
March	42,499
February	9,300
January, 1923	15,000
December	23,255
November	18,500
October	12,700
September	10,350
August	1,610
July	13,700
June	13,100
May	18,250
April	31,500
March	12,000
February	14,500
January, 1922	11,000
1922 total	180,465

Current demand remains light, both for cars and locomotives. Orders for the latter include one for the Alton & Southern, placed with the American Locomotive Co., and one for the Donovan-Corkeny Logging Co., Aberdeen, Wash., awarded to the Baldwin Locomotive Works.

The Imperial Railways of Japan has placed an order for 3000 tons of rails with the United States Steel Products Co. The same buyer is closing hids in Tokio today on additional 10,000 tons of rails.

Influenced by Coal Activity

Pittsburgh, July 10.—Influenced more or less by the dearth of coal buying, mining activity at present does not call for large tonnages of light rails. The majority of orders comprises single carloads. Occasionally an order for two to five carloads appears. A fairly large number of these small lots are being placed. All this business is being taken at the 2.25c, base Pittsburgh, level although it is understood that rerollers are quoting lower.

Track accessory prices are unchanged at the quoted levels and since makers now are paying more for material than at any time in the past year, buyers of spikes and tie plates who hope for lower figures will probably be disappointed. Some bolt makers apparently need business and are offering price inducements although nothing lower than 4.00c base Pittsburgh, on large track bolts is being quoted here. Small track bolts are quoted all the way from 4.25c to 5.50c, base Pittsburgh.

Roads Keep Up Buying

Chicago, July 10.—Although diminished buying of railroad cars has given an impression in some quarters that railroads are reducing their purchases involving iron and steel, this conclusion is not warranted and demand for steel in some form for railroad use is keeping up at a heavy rate. Orders were placed during the past week for about 1800 cars which will require between 8000 and 9000 tons of steel, much of which will be furnished by Chicago producers. At present some new inquiry for standard steel rails is coming out and a total of at least 160,000 tons is pending or will be represented in inquiries during the next few days. This includes about 40,000 tons for the Chicago, Burlington and Quincy railroad and 60,000 tons for the Illinois Central railroad. The latter inquiry is practically placed, about half of it going to the Tennessee Coal, Iron & Railroad Co., and the remainder to Chicago mills. The Pere Marquette railroad is asking quotations on 4500 tons of relayers. Track fastenings continue in excellent demand, sales being made frequently of small lots, with inquiries for 500 to 1000 kegs from several roads. One inquiry now before the market on the part of a western railroad asks for 5000 kegs of spikes for immediate delivery.

CAR ORDERS PLACED

Live Poultry Transit Co., 200 poultry cars, to New City Car Co.

New York Central railroad, 500 stock cars to Pennsylvania Tank Car Co., 500 stock cars to American Car & Foundry Co., 500 flat cars to Standard Steel Car Co.

Southern Pacific railroad, 11 buffet-baggage cars to American Car & Foundry Co.

Pacific Electric railway, 50 motor coaches, to the Standard Steel Car Co., 50 street cars to St. Louis Car Co.

Baltimore & Ohio railroad, 100 tie cars and 15 piling cars, to the Pressed Steel Car Co.

Erie railroad, repairs to 200 produce cars, to the Illinois Car Co., and repairs to 200 gondolas, to the Greenvile Car Co.

Standard Oil Co. of New Jersey, 12 tank cars, to the American Car & Foundry Co.

General Sugar Co., 100 cane cars, to the Gregg Co. Ltd.

CAR ORDERS PENDING

South African railways, 400 box cars; bids asked.

W. H. Bradford & Co Inc., Philadelphia, 200 coal cars; bids asked.

Freight Car Loadings Set New High Mark

Washington, July 10.—Loadings of freight cars during the week ended June 30, totaling 1,021,770 set a new high record, topping the 1,018,539 mark registered in the week ended Oct. 14, 1920. This new record was made at a time when the net surplus of cars totaled over 52,000 daily. It shows the gain in industrial activity over last year when compared with the loading of only 862,845 cars for the week ending June 30, 1922. The American Railway association officials expect loadings to hover around the million mark weekly throughout the summer, reaching a probable maximum of 1,200,000 cars in October. The new record, made in June, is all the more remarkable when it is considered that the year's peak comes in October with the movement of crops and harvests. The record was made also in the face of decreasing demand for coal and coke.

The Nonferrous Metals

Prices a Little Stronger as London Is More Cheerful, Except Lead, which Continues Down

	Copper—Electro delivered	Copper—Lake delivered	Spot Straits New York	Lead† New York basis	Zinc St. Louis basis	Spot† aluminum	Spot antimony	Nickel spot
July 4	Holiday.							
July 5	14.62½	14.87½	37.62½	6.35	5.80	26.00	7.00	29.00
July 6	14.50	14.75	38.00	6.25	5.87½	26.00	7.00	29.00
July 9	14.50	14.75	38.50	6.25	5.97½	26.00	7.00	29.00
July 10	14.62½	14.75	38.37½	6.10	6.05	26.00	6.80	29.00

†Outside market quotation.

NEW YORK, July 10.—Declines in metal prices which were general through the month of June have been checked the past few days. London prices have shown more firmness and this has extended sentimental strength to this market, which has been extremely sensitive to political and economic conditions in Europe.

While some copper has sold at as low as 14.37½c, delivered, the price has recovered to 14.50c, delivered, and most of the large agencies have adhered to 15c. New buying has been quiet, both foreign and domestic, although China has been in the market for about 1000 tons. Statistically, the copper market has been strong and fabricators have enough business on books to keep them busy two or three months, so that shipments of copper to mills are expected to continue heavy for some time, while renewed buying is looked for soon. Casting copper has sold at 14.12½c to 14.25c, refinery; Lake at 14.75c, delivered.

Zinc prices have recovered about ¼-cent. Closing of the Tristate mines for the first two weeks in July, due to unprofitable ore prices, has caused a recovery of $3 a ton in ore quotations and contributed strength to the slab market, with the result that slab for July shipment has been sold at 6c, East St. Louis. With the first signs of a turn in prices buyers entered the market, both consumers and dealers, and a fair business has been done for third quarter shipments. High grade zinc prices are a little lower at 8c to 8.50c, delivered.

The lead market has declined steadily, led by the American Smelting & Refining Co. Since June 20 the leading interest has reduced prices $2 a ton, from 7.25c to 6.10c, New York, and independents have followed in line. St. Louis prices have also declined, but keeping not quite the full freight differential under the New York market. On July 9 the New York price was 6.25c and the St. Louis price was 5.90c to 6c but after the last cut they were respectively 6.10c and 5.87½c. Business has been slow. The successive declines in the American market have not been followed in London and there is no immediate possibility of import offerings at competitive prices.

Tin prices have recovered a little since early in the month, when the expectancy of unfavorable June statistics caused sentimental depression and lower prices. The statistics proved to be better than expected and there has been consuming buying at a fair rate the past week, stiffening prices here and in London. Quotations for Straits tin have ranged between 37.50c and 38.50c. Spot Chinese tin has been scarce at about ⅛-cent under spot Straits.

Antimony has been in light demand at 6.75c to 7c, duty paid, with futures obtainable at 4.87½c, in bond.

Virgin ingot, 98 to 99 per cent aluminum has been obtainable at 26c, New York, from certain sources, although still scarce. A fair inquiry has been in the market for last half delivery, but most sellers are more concerned on making deliveries due now.

Mill Products

Base prices cents per pound, f.o.b. mill

SHEETS	
Copper, hot rolled, 24 oz., min.	23.75
High brass	19.75
Zinc, ga. 9 to 18 (plates ½c less)	8.90
Lead, full sheets (cut ¼c more)	10.75
Aluminum, base 18 ga. and up...	35.40
SEAMLESS TUBES	
High brass	25.50
Copper	27.00
RODS	
High brass, round, ⅝ to 2½ inch	18.00
Naval brass rod	20.25
WIRE	
Copper	17.25 to 18.00
High brass	20.25

Old Metals

Dealers' buying prices cents per pound

HEAVY RED BRASS	
Cleveland	9.50 to 10.00
New York	9.25 to 9.50
Chicago	8.25 to 9.00
HEAVY YELLOW BRASS	
New York	6.50 to 7.00
Chicago	7.00
Cleveland	6.50 to 7.00
ZINC	
New York	4.25
Cleveland	3.00 to 3.25
HEAVY COPPER AND WIRE	
Cleveland	11.50 to 12.00
New York	11.50 to 12.00
Chicago	11.00 to 11.25
RED BRASS TURNINGS	
New York	8.75 to 9.00
Cleveland	8.50 to 9.00
Chicago	6.75 to 8.00
YELLOW BRASS TUBING	
Cleveland	6.00 to 6.50
NO. 1 BRASS ROD TURNINGS	
Cleveland	6.00 to 6.50
New York	6.75 to 7.00
Chicago	7.00
ALUMINUM BORINGS	
Cleveland	10.00 to 11.00

Iron Ore Imports Larger

Philadelphia, July 10.—Imports of iron ore received in this port during the week ending July 7 showed a gain over those of the preceding week, amounting to 30,343 tons as compared with 13,839 tons of the week ended June 30. Imports were as follows: Iron ore, from Tunis, 8050 tons, from Spain, 8820 tons and from Sweden 13,473 tons, ferromanganese, from England, 518 tons; chrome ore, from Portugese East Africa, 2000 tons.

Appoint Committee for Cast Iron Pipe Standards

Washington, July 10.—Fourteen men have been appointed members of a committee to consider the application for approval of three specifications developed by the American Gas Institute and submitted to the American Engineering Standards committee for endorsement. The Standards committee has appointed the following group to consider and develop any changes required: S. G. Flagg, Jr., chairman, representative of American Society of Mechanical Engineers on American Engineering Standards committee; F. A. Barbour, representing American Water Works association; E. A. Barrier, representative of the Fire Protection group on the Standards committee; W. Forstall, representing the American Gas association; A. H. Hall, representative of the Gas group on the Standards committee; W. G. Hammerstrom, chief engineer, Lynchburg Foundry Co., Lynchburg, Va.; H. Kely, representing Associated General Contractors of America; N. F. S. Russell, representing the United States Cast Iron Pipe & Foundry Co.; R. Toensfelt, representing the American Society for Municipal Improvements; W. Wood, president R. D. Wood & Co.; C. D. Young, representing American Society for Testing Materials on the Standards committee; F. A. McInnes, representing the New England Water Works association; F. F. Schauer, representing the Natural Gas Association of America; A. W. Claussen, representing the Underwriters' Laboratories, and J. C. Meloon, representing the National Automatic Sprinkler association.

Start Power Plant Project

Steubenville, O., July 10.—Work has been started on preliminary construction of a $9,000,000 power plant on the Ball farm near Toronto, O. The plant, to be known as the Ohio River Edison Power Co., is a subsidiary of the Pennsylvania & Ohio Power & Light Co. The initial outlay for buildings, machinery and equipment is said to be $7,000,000. The company will mine its own coal.

Gathering Cost Data

Philadelphia, July 10.—Paul M. Tyler, chairman of the metals section of the tariff commission, Washington, is visiting blast furnaces here and in the eastern and central Pennsylvania districts, gathering data on costs and other matters relating to pig iron tariff requirements. These findings will be reported to the tariff commission. He later will visit Europe to study the situation in the various countries abroad. N. W. Leonard, of the metals section of the tariff commission, is now gathering similar data at Virginia furnaces.

Coast Prices Are Firm

Demand for Plates from Oil Companies Increasing—Inquiries in Pig Iron Market Light—June Sales of Warehouse Material Show Increase

SAN FRANCISCO, July 7.—Although trading in iron and steel products, in the local market, is not as heavy or as well sustained as it is in the Los Angeles district, a good volume, in the aggregate, is being booked, prices are firm and general business conditions are good. Oil companies are beginning to come into the market again for more plate tonnages and several projects, such as pipe lines, involving heavy quantities shortly will be ready for figures. Building activity continues unabated and few projects have been held up.

Pig Iron and Coke

Due to the fact that most of the foundries in this section bought heavily several months ago, it is not expected that new inquiries for pig iron will develop before August or September. Prices on foreign iron have weakened somewhat and the better grades can now be secured at from $36 to $38 duty paid San Francisco. The Bethlehem Steel Co. has sold approximately 1000 tons of ingot molds to the Columbia Steel Corp.

Sales of foundry coke are confined to occasional carlots. Turkey Nob coke is being quoted at $28 delivered while the Tonega coke is held at $24.

Bars, Plates and Shapes

Merchant bar material is only in fair demand but the price of the local mills' product remains firm at 3.25c f.o.b. San Francisco. A good volume of concrete bar tonnage is being booked but lettings of under 100 tons predominate. However, larger projects recently awarded have totaled over 3000 tons. Local bar mill operators have advanced their price on reinforcing bars from 3.30c to 3.50c f.o.b. San Francisco on 250-ton lots.

After a lull, lasting a number of weeks, oil companies are again entering the market for oil tank plate tonnage. It is expected that inquiries for 17,000 tons for the Bull Run pipe line at Portland will be issued in the early part of July. The Shell Oil Co. is asking for bids on two 80,000-barrel and two 35,000-barrel tanks involving 800 tons. The Sacramento Pipe Works secured 200 tons for the Napa pipe line. The Western Pipe & Steel Co. secured the Hetch Hetchy pipe line involving 17,000 tons and 1400 tons for the penstock, M. W. Kellogg Co. receiving the award for the balance of the penstock involving 4500 tons. Prices appear to be firm at 3.05c c.i.f. San Francisco as a minimum while as high as 3.20c has been secured recently.

Fabricators of structural shapes report a good volume of business composed mostly of small tonnages. Few building projects have been held up in the Far West on account of higher costs. Large awards made recently total over 2000 tons, while business pending aggregates over 13,000 tons. Prices on plain shapes range from 3.05c to 3.15c c.i.f. San Francisco.

Other Finished Material

Until recently railroad buying has been of small proportions. The Southern Pacific Co. opened bids recently on 5000 kegs of track spikes. The San Diego Electric Co. placed 800 tons of girder rails with the United States Steel Products Co.

The market for sheets here is steady but smaller in volume, due to the fact that most consumers have covered for their third quarter requirements. As far as can be ascertained, British blue annealed sheets have not been sold in this market. No weakness in sheet prices is noted and galvanized, black and blue annealed sheets are being quoted at 5.00c, 3.85c and 3.00c Pittsburgh base respectively. While some independents continue to quote 3.25c on blue annealed no sales at this figure are noted.

During the past few weeks some rather heavy tonnages of cast iron pipe have been placed by municipalities, but at the moment both private and municipal demand is light. Prices are fairly firm at $62 a ton delivered. Fullerton awarded 616 tons of 6-inch pipe to the United States Cast Iron Pipe & Foundry Co. This same company secured 435 tons for Alhambra, 385 tons for El Segundo, 8415 tons for Portland, 140 tons for San Marino and 396 tons for Seattle. The American Cast Iron Pipe Co. secured 100 tons for Sacramento, 300 tons for Glendale, 396 tons for Seattle, 324 tons for Astoria, Oreg., and 3300 tons for Los Angeles. The National Cast Iron Pipe Co. has taken 135 tons for Palo Alto, 375 tons for Mayfield and 2630 tons for Los Angeles.

Demand for standard pipe remains heavy and stocks are still badly broken. While the volume of oil country pipe has been less than in the past, due to the curtailing of production especially in the older field, pipe mill representatives report heavy tonnages still coming to hand.

Warehouse Market

Out-of-stock jobbers report that June sales will show an improvement over those for May. Demand for all lines is good with sheets and pipe most active. Some reductions and some advances have been put into effect by the San Francisco jobbers as follows: Blue annealed from 5.00c to 5.25c, black sheets No. 28 gage from 6.30c to 5.80c, galvanized sheets No. 28 gage from 7.15c to 6.50c, cold-rolled from 5.50c to 5.75c, nails bright from 4.30c to 4.40c, nails cement coated from 3.70c to 3.80c and machine bolts large from 35 off to 30-10 off. The drop in sheets of $13 a ton has been caused by the entrance of concerns, heretofore engaged in the selling of other products, into the sheet market. Los Angeles prices have been revised as follows: Bars from 4.30c to 3.85c, shapes from 4.40c to 3.95c, plates from 4.45c to 3.65c, bands from 5.20c to 4.60c and cold-rolled shafting from 5.25c to 5.60c.

To Revise Standards for Copper Wire

The American Society for Testing Materials has been designated by the American Engineering Standards committee as sponsor for the standard specifications for soft or annealed copper wire for lake copper wire, bars, cakes, slabs, billets, ingots and ingot bars for electrolytic copper wire bars, cakes, slabs, billets, ingots and ingot bars and for standard methods of battery array of copper. These specifications were approved sometime ago as tentative and the Testing material society now contemplates the organization of a sectional committee to revise them.

The American Gas association has submitted for the approval of the American Engineering Standards committee three specifications for cast iron pipe and special castings. These specifications were developed by the American Gas institute in 1911 at which time the dimensions for bell and spigot castings were adopted.

In 1913 the association adopted dimensions for flange casting and governing the manufacture of all cast iron pipe and specials which were derived from an old standard adopted in 1905 by the American Gas Light association. The specifications now under consideration are said to be in general use for underground gas pipes throughout the United States. The American Engineering Standards committee has appointed a large and representative committee to consider the application for the approval of these specifications. The general specifications for steel railway bridges for fixing spans less than 300 feet in length and specifications for movable railway bridges have been submitted by the association for approval by the American Engineering Standards committee as American standards. A committee will be appointed to determine whether they are suitable for adoption and in the meantime expressions are invited from those interested as to the extent to which these specifications meet the requirements of bridge building practice and railway service.

Receiver Is Discharged

Approval of the proposed reorganization plan and discharge of Receiver E. M. Hummer of the Defiance Machine Works at Defiance, O., has been ordered by Federal Judge Killits of Toledo. The proposed plan to reorganize the company calls for an issue of $600,000 bonds and $200,000 non-assessable management stock.

All Steel Bar Extras Raised

Advances of $2 to $20 Per Ton Represented in New List of Carnegie Steel Co. Which Is Adopted by Leading Independent Mills—Revisions Designed To Correct Present Inequalities—Applies To All Shipments

PITTSBURGH, July 10.—Under date of July 1, 1923, the Carnegie Steel Co., as noted in the July 5 issue of IRON TRADE REVIEW, has issued a new card of standard classification of extras on steel bars and small shapes. This card supersedes the one dated July 15, 1919, which was a revision of the list adopted May 22, 1918. The new card inaugurates increases of $1 to $20 per ton as shown in the accompanying tables. This action was taken to remove marked inequalities which have existed for some time and to bring selling prices more into harmony with today's higher production costs. The higher extras have applied in connection with shipments made following the distribution of the cards on Thursday, July 5 of last week. Independent producers, including the Republic Iron & Steel Co., the Youngstown Sheet & Tube Co., the Bethlehem Steel Co., and others, are preparing similar cards

In connection with flats, the sizes have been rearranged somewhat, the old list in cents per pound being as follows:

FLATS

	July 15, 1919
1 to 6-in. x ⅜ to 1-in.	Base
1 to 6-in. x ¼ to 5/16-in.	.10c
11/16 to 15/16-in. x ⅜ to ¾-in.	.20c
11/16 to 15/16-in. x ¼ to 5/16-in.	.25c
9/16 to ⅝-in. x ⅜ to ½-in.	.25c
9/16 to ⅝-in. x ¼ to 5/16-in.	.35c
½-in. x ⅜ to 7/16-in.	.50c
½-in. x ¼ to 5/16-in.	.60c
7/16-in. x ⅜-in.	.70c
7/16-in. x ¼ to 5/16-in.	.80c
⅜-in. x ¼ to 5/16-in.	1.00c
1⅛ to 6-in. x 1/16 to 1 3/16-in.	.05c
1⅛ to 6-in. x 1¼ to 1½-in.	.10c
1¾ to 6-in. x 1⅜ to 2¾-in.	.15c
3⅛ to 6-in. x 3 to 4-in.	.20c

While the new list is as follows:

Thickness In Inches

Width In Inches	4 to 3	3 to 2	2 to 1	1 to ¾	¾ to ½	½ to ⅜	⅜ to ¼
⅜	..	..	..	....	....	....	1.40
½	..	..	..	....	....	....	1.40
½	..	..	..	....	....	....	.70
⅝	..	..	..	....	.50	.50	.75
⅝ to ¾	..	..	..	....	.40	.40	.60
¾ to ⅞	..	..	..	....	.30	.30	.40
⅞ to 1	..	..	..	....	.20	.20	.30
1 to 1⅜	..	..	.10	Base	Base	Base	.15
1⅜ to 2	..	..	.10	Base	Base	Base	.15
2⅛ to 2½	..	.20	.10	Base	Base	Base	.15
2⅝ to 3	..	.20	.10	Base	Base	Base	.15
3⅛ to 3½	.30	.20	.10	Base	Base	Base	.15
3⅝ to 4	.30	.20	.10	Base	Base	Base	.15
4⅛ to 5	.30	.20	.10	Base	Base	Base	.15
5⅛ to 6	.30	.20	.10	Base	Base	Base	.15

The comparative tables of extras in cents per pound on rounds and squares; hexagons; leg angles, equal and unequal; channels; tees; half rounds, solid; half ovals; and ovals; are as follows:

ROUNDS AND SQUARES

Size	New	Old
¼ to 3 1/16-in.	Base	Base
5/16 to 11/16-in.	.10c	.05c
9/16-in.	.15c	10c
½-in.	.20c	.10c
7/16-in.	.30c	.20c
⅜-in.	.40c	.25c
11/32-in.	.55c	.30c
5/16-in.	.70c	.35c
9/32-in.	.85c	.40c
¼-inch	1.00c	.50c
15/64-in.	1.25c	.75c
7/32-in.	1.50c	1.00c
3/16-in.	2.00c	1.25c
3⅛ to 3 9/16-in.	.10c	.075c
3⅝ to 4 1/16-in.	.15c	.125c
4⅛ to 4 9/16-in.	.25c	.15c
4⅝ to 5 1/16-in.	.35c	.20c
5⅛ to 9 1/16-in.	.45c	.25c
5⅝ to 6 1/16-in.	.55c	.375c
6⅛ to 6 9/16-in.	.65c	.50c
6⅝ to 7¼-in.	.75c	.625c

HEXAGONS

Size	New	Old
¾ to 3 1/16-in.	.25c	.15c
5/16 to 11/16-in.	.40c	.25c
½ to 9/16-in.	.60c	.35c
7/16-in.	.80c	.55c
⅜-in.	1.00c	.65c
5/16-in.	1.20c	.75c
¼-inch	1.50c	1.00c

EQUAL LEG ANGLES

1½ x 1½-in. and wider, but under 3-in. x 3/16-in. and over	.15c	.10c
1½ x 1½-in. and wider, but under 3-in. x ⅛-in.	.25c	.15c
1 x 1 to 1¼ x 1¼-in. x 3/16-in. and over	.25c	.15c
1 x 1 to 1¼ x 1¼-in. x ⅛-in.	.30c	.20c
⅞ x ⅞-in. x 3/16-in.	.35c	.20c
⅞ x ⅞-in. x ⅛-in.	.40c	.25c
¾ x ¾-in. x 3/16-in	.45c	.25c
¾ x ¾-in. x ⅛-in.	.60c	.30c
⅝ x ⅝-in. x ⅛-in.	1.50c	1.10c
⅝ x ⅝-in. x 3/32-in.	2.00c	1.30c
½ x ½-in. x ⅛-in.	2.20c	1.60c
½ x ½-in. x less than ⅛-in.	2.50c	1.80c
3 x 3-in. x 3/16-in.	.35c	.35c
3 x 3-in. x ⅛-in.	.50c	.35c

UNEQUAL LEG ANGLES

3 x 2½ and 3 x 2 by less than ⅛-in. thick.	.35c	Special
1 x ⅝ x 3/16-in. thick	.50c	Special
1 x ⅝ x ⅛-in. thick	.60c	Special

Other unequal leg angles subject to special prices which will be furnished on application.

CHANNELS

Size	New	Old
1½-in. and wider, but under 3-in. x 3/16-in. and over	.25c	.15c
1½-in. and wider, but under 3-in. x ⅛-in.	.40c	.25c
1 to 1¼-in. x 3/16-in. and over	.40c	.25c
1 to 1¼-in. x ⅛-in.	.50c	.35c
1 to 1¼-in. x 7/64-in.	.70c	.50c
¾ and ⅞-in. x 3/16-in. and over	.50c	.30c
¾ and ⅞-in. x ⅛-in.	.60c	.40c
¾ and ⅞-in. x 7/64-in.	.80c	.55c
5/8-in. x ⅛-in. and over	1.70c	1.20c
5/8-in. x 3/32-in.	2.00c	1.40c
½-in. x 7/64-in. and over	2.50c	1.80c
½-in. x 5/64-in.	3.00c	2.00c

TEES

1½ x 1½-in. and wider, but under 3-in. x 3/16-in. and over	.30c	.20c
1 x 1 to 1¼ x 1¼-in. x 3/16-in. and over	.55c	.40c
1 x 1 to 1¼ x 1¼-in. x ⅛-in.	.70c	.50c
⅞ x ⅞-in. x 3/16-in.	.70c	.50c
⅞ x ⅞-in x ⅛-in.	.90c	.60c
¾ x ¾-in. x 3/16-in.	.90c	.60c
¾ x ¾-in. x ⅛-in.	1.10c	.70c
⅝ x ⅝-in. x ⅛-in.	1.80c	1.30c
½ x ½-in. x ⅛-in.	2.50c	1.80c

Unequal tees are subject to special prices which will be furnished on application.

HALF ROUNDS—SOLID

Size	New	Old
1 to 3-inch	.30c	.20c
¾ to 15/16-in.	.50c	.35c
5/8 to 11/16-in	.70c	50c.
½ to 9/16-in.	1.00c	.70c
⅜ to 7/16-in.	1.50c	1.10c

Hollow half rounds are subject to special prices which will be furnished on application.

HALF OVALS

Size	New	Old
1 to 4-in. x ¼-in. and over	.40c	.25c
1 to 4-in. x Nos. 7, 8, 9 and 3/16-in.	.50c	.35c
1 to 4-in. x Nos. 10, 11, 12 and ⅛-in.	.70c	.50c
¾ to 15/16-in. x 3/16-in. and over	.70c	.50c
¾ to 15/16-in. x Nos. 10, 11, 12 and ⅛-in.	.90c	.65c
¾ to 15/16-in. x Nos. 13, 14, and 15	1.20c	.80c
⅝ to 11/16-in. x 5/32-in. and over	.90c	.60c
⅝ to 11/16-in. x Nos. 10, 11, 12 and ⅛-in.	1.20c	.75c
⅝ to 11/16-in. x Nos. 13, 14 and 15	1.40c	.90c
½ to 9/16-in. x ⅛-in. and over	1.20c	.80c
½ to 9/16-in. x Nos. 13, 14 and 15	1.60c	1.05c
⅜ to 7/16-in. x 3/32-in. and over	2.00c	1.35c
⅜ to 7/16-in. x Nos. 14 and 15	2.40c	1.60c

OVALS

Size	Old	New
¾ to 2½-in. x ⅜-in. and over.	.30c	.20c
¾ to 2½-in. x ¼-in. to 5/16-in.	.40c	.30c
¾ to 2½-in. x 5/32 to 3/16-in.	.70c	.45c
⅝ to 11/16-in. x 5/16-in. and over	.50c	.35c
⅝ to 11/16-in. x 3/16-in. to ¼-in.	.70c	.50c
⅝ to 11/16-in. x ⅛-in. to 5/32-in.	1.00c	.65c
½ to 9/16-in. x ¼-in. and over	1.00c	.55c
½ to 9/16-in. x ⅛ to 3/16-in.	1.30c	.70c
½ to 9/16-in. x 3/32-in.	1.60c	.95c
⅜ to 7/16-in. x 3/16-in. and over	1.60c	.95c
⅜ to 7/16-in. x ⅛-in. to 5/32-in.	2.00c	1.20c
⅜ to 7/16-in. x 3/32-in.	2.40c	1.45c

The extras for machine cutting to specified lengths, too, have been increased as follows: Lengths over 48 inches from 15c per pound to 20c; lengths over 24 inches to 48 inches, inclusive, from 25c to 30c; lengths over 12 inches to 24 inches, inclusive, from 35c to 40c. In connection with lengths of 12 inches and less, the extra will be furnished on application but will not be less than 70c whereas before the minimum it was 45c.

With reference to the extras for cutting to specified lengths, other than machine cutting, no charge now is made for lengths of 60 inches and over; before, the minimum was 120 inches. For cutting to lengths over 60 inches to 120 inches, it now is the same, namely 5c per pound as before on lengths over 48 inches to 59 inches. The extra for cutting to lengths over 48 inches to 60 inches inclusive, now is the same, namely 10c as before on lengths over 24 inches to 48 inches. Cutting to lengths over 24 inches to 48 inches, inclusive, now is 15c instead of 10c; over 12 inches to 24 inches inclusive, it now is 30c instead of 20c; and on lengths of 12 inches and less, the extra will be furnished on application but it will

(*Concluded on Page* 127)

British Market at Critical Point

Pig Iron Prices Continue Descent, with Persistent Failure of Consumers To Buy—Furnaces Are Blowing Out—Steel Situation Also Weak—French Take 30,000-Ton Argentina Rail Order

Iron Trade Review Staff Cable

European Headquarters,
IRON TRADE REVIEW,
2-3 Caxton House, Westminster, S. W.1

LONDON, July 10.—The position of the British pig iron market is becoming critical. All prices have been reduced but consumers are demanding a further reduction of 10s ($2.28) and the makers say this is impossible with coke prices at their present high level. Operation of three furnaces in the Barrow district recently has been suspended and other suspensions are likely to be made. The exports of pig iron from Middlesbrough in June amounted to 25,874 tons, the United States being the largest buyer, taking 5545 tons. Germany was the largest buyer of pig iron in the first half of the year, shipments to that country totaling 50,000 tons.

Hot weather is checking mill and forge operations. All steel prices are weak. The railways are the best customers, with purchases of tires, axles and rolling stock, though rail orders are light and the largest rail mills are idle. Continental steel prices are not competitive with English at present. The advance in the bank rate has been unwelcome to British steel producers, tending to check the revival in trade. India was the largest buyer of steel in June, exports from Middlesbrough to India totaling 632 tons.

The scarcity of coke on the Continent has become more emphasized. German production has been further restricted. The Herman Schutte Works is operating only two furnaces, with a daily output of 50 tons. The works have 300,000 tons of products in stock at present, unsalable. The unemployed from the German plants are engaged in cutting timber.

Three French mills share an order recently placed for 30,000 tons of rails for Argentina, the price being 600 francs ($36) mills.

Changes in British quotations in the week bring the following products to the levels as noted:

Billets and sheet bars £7 5s ($33.10); wire rods £12 5s ($55.92); steel bars for domestic use £9 15s ($44.51); steel bars for export £9 5s ($42.23); beams, domestic, £9 5s ($42.23); beams, export £8 15s ($40.94); East coast hematite £5 7s 6d ($24.54); West coast hematite, Middlesbrough basic and Middlesbrough No. 3 foundry iron £5 10s ($25.11); Derbyshire, Northamptonshire and Staffordshire No. 3 foundry iron £5 ($22.83); Scotch foundry iron £5 9s ($24.88).

Sterling Exchange is Figured on the Basis of $4.56⅝.

Works To Suspend if Orders Do Not Increase

European Staff Special

Office of IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,

BIRMINGHAM, Eng., June 29.—Conditions in the British iron and steel industry present a striking contrast to those in the United States. This frequently is commented on by British makers who are confronted by the prospect of extensive restriction of output. A number of companies on the northeast coast have given their men notice with a view to suspension. The most noticeable feature is the complete absence of forward booking owing to the want of confidence. A fair aggregate of small orders is being placed to meet daily necessities. While the steel manufacturers lately made a show of indifference and circulated stories of their satisfactory order books, they are now pressing for new work. Some customers who have placed orders within the past week have been surprised to see the steel arrive at their establishment within a few hours.

Several reductions have been made in prices. In Cleveland the makers are accepting £5 15s ($26.22) per ton for No. 3 G. M. B. iron and East Coast mixed numbers are £5 12s 6d ($25.87). This is practically the price of West coast hematite and reductions also have taken place in the foundry irons produced in Derbyshire and Northamptonshire, which are about 2 shillings 6 pence ($0.57) cheaper in the week. So far the reductions have brought no addition to the business in hand. One obstacle to improvement in the market is the high price of coke. Durham coke still costs £2 1s 6d ($9.54) delivered at the works, and on the west coast the figure of £2 8s ($11.04) still is maintained. The Midland smelter estimates that his fuel costs him over £2 ($9.20) by the time he gets it at the furnace. So far from the continental difficulty approaching a settlement, matters appear to be going from bad to worse, and there is some revival of coke buying for the Continent, which has had the effect of hardening fuel prices. It seems likely that there will be a reaction in pig iron production, any further extension of active furnaces apparently being out of the question.

Sterling—$4.60

Steel prices are easier, especially for semifinished material. A number of the steelworks are accepting £8 ($36.80) for 2-inch billets, though this is not a general price. A proportion of the large firms still want £8 15s ($40.25). The British and continental prices are more nearly alike than for many months past. The latest quotation for Belgian billets is £7 15s ($35.65) or only 5 shillings ($1.15) below the English price. The gain of 5 shillings does not compensate for slower deliveries and prompt cash terms. The greater firmness of foreign steel seems to be connected with the conclusion arrived at that more reliance in the immediate future will have to be made by continental steelmakers on expensive British coke.

Finished steel prices are not being reduced to any extent by the large steelworks, in spite of keener competition from the rerollers, who by virtue of cheaper billets are capturing a lot of the business in bars and sections, gas skelp, etc. The attitude of the steelworks probably is explained by the statement made two days since at Sheffield by Charles Markham, chairman of the Parkgate Iron & Steel Co. This company lost £139,000 during the year, and he complained that largely owing to foreign competition prices had fallen, where-

Current Iron and Steel Prices of Europe

Last Reported Prices Converted into Dollars at Rates of Exchange, July 9

British Market

Home Market Prices. Gross Tons at Works or Furnace

Corrected to Date by Cable

	$	£ s d
SEMIFINISHED		
Billets, soft steel	33.10	7 5 0
Sheet bars	33.10	7 5 0
Wire rods	55.92	12 5 0
FINISHED STEEL		
Steel bars, England, ⅝ to 3-inch	44.51	9 15 0
Steel bars, England, ¾ to 3-inch, for export	42.23	9 5 0
Plates, ship, bridge and tank, England	43.37	9 10 0
Plates, ship, bridge and tank, Scotland	42.23	9 5 0
Beams, England	42.23	9 5 0
Beams, England, for export	40.94	8 15 0
Beams, Scotland	42.80	9 7 6
Beams, Scotland, for export	41.09	9 0 0
Sheets, black, 24 gage	57.06	12 10 0
Sheets, galvanized, 24 gage	84.31	18 5 0
Rails, 60 lbs. and over	45.65	10 0 0
Rails, 60 lbs. and over, for export	43.37	9 10 0
Tin plate, base box, 108 lbs.	5.25	1 3 0
Steel hoops	54.78	12 0 0
Steel hoops, for export	53.64	11 15 0
PIG IRON		
Hematite, East Coast, Mixed Numbers	24.54	5 7 6
Hematite, West Coast, Mixed Numbers	25.11	5 10 0
Basic, Middlesbrough	25.11	5 10 0
No. 3 Foundry, Middlesbrough	25.11	5 10 0
No. 3 Foundry, Derby, Leicester, Nottingham	22.83	5 0 0
No. 3 Foundry, Northamptonshire	22.83	5 0 0
No. 3 Foundry, Staffordshire	22.83	5 0 0
No. 3 Foundry, Scotch	24.88	5 9 0
Ferromanganese, 76 to 80 per cent	88.17	18 0 0
Ferromanganese, 76 to 80 per cent, for export	91.30	20 0 0
COKE		
Yorkshire furnace	6.39	1 8 0
Yorkshire furnace, for export	11.41	2 10 0
Yorkshire foundry	7.99	1 15 0
Yorkshire foundry, for export	11.41	2 10 0

Where no separate export prices are given, same quotations apply to domestic and foreign business.

German Market

Prices Last Reported

	$	Marks per metric ton
PIG IRON		
Hematite, Oberhausen	18.98	2,712,000
Foundry, No. 3, Oberhausen	18.75	2,679,000
Bessemer Stahlheisen, Siegen	11.23	1,604,000
Foundry, No. 1, Oberhausen	11.33	1,619,000
Luxemburg Foundry	14.18	2,026,000
COKE		
Ruhr furnace	5.41	773,000
Ruhr foundry	5.64	805,000
SEMIFINISHED STEEL		
Billets	26.74	3,820,000
Sheet bars	29.47	4,210,000
Wire rods	28.00	4,000,000
FINISHED STEEL		
Standard rails	32.90	4,700,000
Merchant bars	32.90	4,700,000
Structural shapes	32.90	4,700,000
Ship plates	38.50	5,500,000
Medium plates, 3 to 5 millimeters	19.87	2,839,000
Sheets, below 3 millimeters	54.60	7,800,000
Tin plate		nominal
Plain wire	35.00	5,000,000
Bands and strips	41.30	5,900,000

All prices are f.o.b. furnace or mill.

On account of the occupation of the Ruhr these prices are largely nominal and cover domestic business only. Export prices are usually quoted, where deliveries can be made, in foreign currency according to the country of destination.

French Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs.)
PIG IRON		
Hematite, Lorraine	24.05	425
Basic Bessemer, Lorraine	22.99	390
Foundry, Longwy, No. 3, sand-cast	22.42	380
Foundry, Longwy, No. 3, chill-cast	22.99	390
Ferromanganese, 76 to 80 per cent	91.37	1,550
COKE		
French furnace	6.96	135
German furnace, f.o.b. frontier*	10.63	180
German furnace, f.o.b. frontier**	14.74	250
French foundry	8.55	145
SEMIFINISHED		
Blooms	28.61	485
Billets	31.24	530
Sheet bars	41.27	700
FINISHED STEEL		
Standard rails	45.37	600
Merchant bars	46.55	620
Angles	45.96	610
Normal beams and profiles	33.90	575
Plates, ship and tank, 10 millimeters and thicker	50.11	680
Plates, bridge and tank, 5 to 10 millimeters	41.27	700
Sheets, black, 3 millimeters	43.62	740
Sheets, blue annealed, 2 millimeters	49.72	840
Shafting, cold-drawn, 40 to 60 millimeters	82.53	1,400
Bars, 2 per cent nickel steel	106.31	1,800

All prices are f.o.b. furnace or works.

*Up to 50 per cent of normal requirements.

**Over 50 per cent of normal requirements.

Belgian Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs.)
PIG IRON		
Basic bessemer, Belgian	20.29	415
Basic open-hearth, Belgian	26.65	545
Gray forge, Belgian	13.20	270
Foundry, No. 3, Belgian	22.49	460
Foundry, No. 3, Luxemburg	22.01	450
Foundry, No. 3, Lorraine	22.01	450
SEMIFINISHED		
Blooms	25.43	520
Billets	26.90	550
Sheet bars	28.12	575
Wire rods	37.90	775
FINISHED MATERIAL		
Standard rails	35.45	725
Merchant bars	30.07	615
Normal beams and profiles	29.34	600
Plates, 5 millimeters and thicker	32.76	670
Sheets, black, 3 millimeters	35.45	725
Sheets, galvanized, 1 millimeter	88.22	1,800
Plain wire	53.79	1,100
Galvanized wire	63.57	1,300
Wire nails	56.24	1,150

All prices are f.o.b. furnace or works.

as the cost of production remained stationary. He did not believe there was a steelworks in Great Britain that was making ends meet. This opinion is expressed frequently, and accordingly the steelworks are settling down to the decision to close rather than face losses.

Steel strip has been reduced from £13 ($59.80) to £12 10s ($57.50). The one increase in price relates to steel wire, the makers of which have an association regulating prices, apparently being the only one still remaining able to initiate any sort of price agreement. The wiremakers have lately been able to put up their prices from £15 ($69) to £18 ($82.80) per ton for mild steel wire. Some Birmingham users who obtained their wire at the end of June at £15 ($69) have had to renew for the third quarter at £18 ($82.80) per ton. This high price of wire affects the production of rivets, spikes, screws, nails and a number of products for which the Midlands have a reputation. The material now costing £18 ($82.80) was before the war obtainable at £7 ($32.20).

It seems quite possible that the rather aggressive policy of the wiremakers may give an opening to foreign competition. Certain negotiations have commenced, on the initiative of Canadian wire manufacturers and on learning of this some large Birmingham users have approached the merchants concerned with a view to purchasing from Canada if the price and the quality are satisfactory.

A reduction of considerable interest is the one declared in the price of galvanized sheets which are now £18 5s ($83.95) to £18 10s ($85.10), a fall of nearly 15 shillings ($3.45) per ton since last week. For some time, there has been dissatisfaction on the part of the buyers who considered they were entitled to the benefit of the reduction in sheet bars and spelter. Black sheets are steady at £13 10s ($62.10) and a feature of the Scotch business is the fairly large tonnage of orders flowing in on export account. The sheet trade derives considerable advantage from the fairly healthy state of the motor industry, which takes good tonnages of this material, while the hardware trade calls for sheets for a considerable variety of requirements, largely for stamping purposes.

The tin plate trade is rather quiet as far as new business is concerned, but the mills have good orders to keep them running well into August. Belgium is considering the imposition of a tariff on tin plate and such useful buying countries as Norway, Japan and India are all trying to set up tin plate industries of their own. In the eastern markets the American mills, as indicated by recent IRON TRADE REVIEW cable-

grams, are capturing a good deal of the business. Among the cheerful records are the figures of Swansea shipments, the port establishing a new record during May with shipments amounting to 734,333 tons against 636,610 a year ago, while for the five months ending in May, 1923, the increase is nearly 700,000 tons.

Again Talk European Steel Combination

European Staff Special

Office of IRON TRADE REVIEW,
23 Rue de la Bienfaisance

Franc—$0.06

PARIS, June 29.—The iron and steel market is gradually adjusting itself to meet the changed conditions brought about by the occupation of the Ruhr. Prices have been moving downward steadily since April, but it seems doubtful whether the mills can make further concessions unless combustibles are lower and they are not likely to be any cheaper until some solution has been reached concerning the Ruhr problem and reparations. Demand for iron and steel products has improved considerably in the last few days. Prices vary widely in different regions as many of the mills are in need of new business immediately and this is leading to severe competition.

Rumors are going around to the effect that industrial leaders on the Continent are again considering the forming of a combination between Belgian, English, German and Luxemburg steel manufacturers. Negotiations along this line were well under way a year ago, but were suspended as England at that time was not in a receptive mood for entering into any trading arrangement. The English are in a different frame of mind now, however, as they believe that the French and Germans will come to an agreement over reparations before the end of the year, following which steps will be taken to organize the European steel industry. England's position in export markets might be endangered if she attempts to stand alone against such a formidable array as would be represented by a Belgian-Luxemburg-French-German syndicate.

Since the war competition for export business has been so keen that such countries as South America, Australia, Africa and Asiatic colonies have been buying iron and steel products at prices which in many instances were below the actual cost of production, and continental manufacturers believe that the only way this can be stopped is to form cartels such as existed in Germany before the war.

The coke situation is becoming easier. Receipts during the past week or stocks seized in the Ruhr were greater than for any other week since the work of removing this coke to France commenced. Buying is not being done in England or the United States. France has asked Belgium to remove the restriction prohibiting the export of coke.

The pig iron market is quiet and prices are steady. Phosphorus pig iron, chill cast No. 3, with silicon 3 to 3.5 per cent, is quoted 380 francs ($22.80) f. o. b. furnace, Moselle or Meurthe-et-Moselle. The price of hematite ranges from 400 francs ($24) to 440 francs ($26.40) depending upon the analysis.

Rolling mills are seeking tonnage and competition is forcing prices downwards. Representatives of large interests are constantly being surprised by the prices quoted by their competitors, and are finding different market conditions in each region. One large concern in the Meurthe-et-Moselle is offering 200-ton contracts to its customers on the following basis: Merchant bars 600 francs, ($36); structural shapes 580 francs, ($34.80); plates, 5 millimeters thick and heavier, 650 francs, ($39.60.)

German Sales Light; Prices Uncertain

European Staff Special

Mark—$0.000007

DUSSELDORF, Germany, June 29.—Prices expressed in marks have again been advanced all around but the mark has been falling so rapidly that quotations in German currency at the present time possess little significance. They apply only to a small tonnage passing between inland buyers and sellers. Export business is now being invoiced almost exclusively in foreign currency, depending upon the country of destination. The prices quoted for export show great variation, being adjusted as far as possible to meet competition and local market conditions.

Comparatively little export business is being done, on account of inability to make shipments or give any definite promises of delivery. Scandinavia is an exception because of the necessity for purchasing Swedish iron ore for blast furnaces in unoccupied Germany. Shipments of finished steel to Sweden, Norway, etc., are being maintained and prices have been reduced so that it is no longer possible for American and British producers to obtain orders for plates, shapes or bars, although the United States Steel Products Co., is stated to be still obtaining orders for galvanized sheets for Scandinavia in spite of German competition.

The new prices on pig iron bring No. 3 foundry up to 1,616,000 marks; No. 1 foundry 1,619,000 marks, and hematite 1,649,000 marks. These prices have already been altered by the fall in the mark, being equivalent at current exchange to $11.20 to $11.55 per metric ton. This is only for iron made from German fuel. For pig iron being made from imported coke, very little of which is for sale, as much as 3,500,000 marks ($25) is being obtained.

Blast furnace coke is 493,000 marks ($3.45) per ton, with billets 2,715,000 marks ($19.10) and shapes, bars and plates from 3,377,000 to 3,832,000 marks per ton. The latter are equivalent to 1.07c to 1.22c per pound. Very little steel is available at these prices, and none for export.

Only 27 blast furnace stacks in the Ruhr remain in operation and most of these are on slack blast. The Coke Producers' association has agreed to restrict production to 15 per cent of capacity in the Ruhr.

Negotiations for the release of steel purchased by foreigners have not yet been productive of results. Owners of German iron and steel plants in the Ruhr fear that their property, will be seized. To forestall this action, heavy interests in several prominent Ruhr iron and steel plants were recently offered to British ironmasters on exceedingly favorable terms, but owing to the confused political outlook the British investors refused to take action, it being purely a gamble as to the stability of German industry.

Japanese Steel Market Is Weakening

Foreign Special Service

Yen—$0.49

TOKIO, Japan, June 27.—Pig iron prices are showing more firmness, though the steel market continues to weaken. The government steelworks contemplates another revision of its prices.

The South Manchuria Railway Co. has revived its plan for reorganizing and enlarging its blast furnaces at Anshantien, Manchuria, and this will be carried out with the aid of additional capital. The government steelworks has started to make tin plate. The products are in three grades, the average price being 300 yen ($147) per ton. Equipment is to be installed for the manufacture of oil cans.

The importation of pig iron from India has been handicapped by an increase in freight rates on the Indo-Japanese lines. The volume of business in pig iron and steel still is small. The hardness of credits adds much

to the restrictive influences of the rainy season now experienced in Japan.

Round bars, tin plate, nails and sheets are accumulating as tonnages are being unloaded at Yokohama and Kobe by almost every steamer hailing from America and Europe. Merchants here would like to cancel old orders, but they cannot. The government steelworks which recently reduced prices with the hope of obtaining more business finds this course has failed.

In the pig iron market No. 1 Japanese is quoted at 70 yen per ton ($34.30), No. 2, 63 yen ($30.87) and No. 3 60 yen ($29.40). No. 1 Hanyang (Chinese) iron is 63 yen ($30.87). Cleveland (British) is 85 yen ($41.65). In the steel market round bars are quoted at 4.20 yen ($2.05) per 10 kwamme, while flat and square bars are 4.40 yen. Plates are 4.20 yen ($2.15) and sheets 8.30 yen ($4.06) per 10 kwamme, (82.67 pounds).

Canadian Structural Steel Market Active

Foreign Special Service

TORONTO, Ont., July 9.—The continued lack of buying of pig iron for the third quarter with a slight improvement in spot demand leads producers to believe that melters will proceed on a hand to mouth basis for a little while. Production has been affected by the strike at the plant of the Dominion Steel Corp., at Sydney, N. S. It is reported that the three furnaces have been banked. The Steel Co. of Canada, Hamilton, Ont., Algoma Steel Corp., Sault Ste. Marie, Ont., and the Canadian Furnace Co., Port Colborne, Ont., are operating at capacity. No further change has been made in prices, which are as follows: No. 1 (2.25 to 2.75 silicon) and malleable, $34.05; No. 2, (1.75 to 2.25 silicon) $33.05, Toronto. Montreal prices are: No. 1 and malleable, $36.40; No. 2, $35.40; Summerlee and Carron, imported, $40, warehouse.

Demand for finished iron and steel continues active. Producers of structural steel say their sales so far this year are twice those of a year ago, and that orders are continually received for fair size tonnages. Several good contracts were awarded during the past week. Shapes and beams are holding at 2.70c, Toronto. Orders for bars are fairly good and business on books is sufficient to keep mills in operation for two months. Bars are strong at 3.10c, Toronto. Demand for plates in Ontario and Quebec is active, and some large tonnages have been closed recently. Plates are quoted at 2.60c, Toronto. A fair demand for galvanized sheets is reported. Blue annealed is moving in a steady manner. No. 28 black sheets are quoted at 4.60c; No. 10 blue annealed, 3.75c, and No. 28 galvanized 6.00c, Toronto.

No improvement has made its appearance in the Canadian iron and steel scrap market during the week. Steel plants are taking in small tonnages of heavy melting steel and turnings for which dealers are offering $15 and $10 per gross ton, delivered Hamilton. Steel and wrought iron axles are in small demand with dealers offering $18 and $21 per gross ton respectively, Toronto. The demand for wrought pipe is exceptionally quiet of late and dealers have made a decided cut in their buying prices and are now offering $8 per gross ton, Toronto, but resale possibilities are limited. Foundries throughout Ontario and Quebec are not showing much interest in their scrap needs, but an occasional order is appearing for machinery cast which dealers are picking up small lots at $21 per net ton, Toronto. Standard car wheels, stove plate and malleable scrap are quiet with dealers offering $16 per net ton, Toronto.

Scrap Buying Still Small

(Continued from Page 77)

volving about 8000 tons of which 6000 tons will find its way into this market. The southwestern and northwestern lines of the Pennsylvania railroad will close lists shortly aggregating 20,000 tons. The Baltimore & Ohio, Norfolk & Western and Southern railroads will be in the market next week with fairly large lists. General conditions indicate prices may be somewhat lower before the reaction sets in. Dealers report no important inquiries. Forwardings from country dealers have been reduced considerably, largely due to the recent heavy price declines.

Consumer Buying Absent

St. Louis, July 9.—The only activity in the market for iron and steel scrap consists of exchanges between dealers and these are not impressive. Sellers with contracts are picking up material and in some instances are paying a little better than the market to get the material forward in order to avoid cancellations. The only consumer sales heard of is of odd car lots for prompt shipment. Even the bargain figures at which some grades now are obtainable are failing to arouse interest.

While few changes were made in dealers' lists, prices continue downward. Quotations largely are nominal and doubtless a number of items could be had under current quotations. Steel car axles were cut $1 a ton to $21, and there was a fractional reduction in pipes and flues. Rails for relaying, 65 pounds and heavier, which have ranged from $37.50 to $39 in recent months, are reduced to $34 and $35. Some steel specialties are being bought in small quantities, but generally the demand for steel is flat. A fair tonnage of rails for rolling changed hands on a basis of $17, a new low price on the movement.

Offerings continue moderate from the railroads, the only lists being 2500 tons by the Baltimore & Ohio and 1200 tons by Union Pacific. Country shipments, especially from the South, are small. Yards in the country are well depleted, especially of agricultural scrap.

Market Marking Time

Birmingham, Ala., July 9.—The Southern market for iron and steel scrap is marking time. The only life has been shown in stove plate of which some of the furnace interests recently buying a small tonnage. Quotations are weak and many are nominal. Much old material still is moving on old contracts. Consumers are urging deliveries on contracts. Scrap is being bought in as quickly as it is assorted and shipped out. Foundries and machine shops still are active but complaint is made of labor shortage, etc., and there is apprehension that production will be interfered with shortly. Old material melters have but little tonnage on yards.

Officials Censured for Herrin Massacre

Chicago, July 10.—Following the failure of the courts to obtain a conviction of union miners accused of the murder of nonunion miners a year ago at Herrin, Ill., the state legislative committee appointed to investigate the massacre has returned a report censuring Adjutant General Carlos E. Black and Col. Samuel N. Hunter of his staff, as well as various Williamson county officials. Failure to call for state troops when the disorders started is the basis of censure of Colonel Hunter, while General Black is blamed for not taking personal charge when tension became high.

Hugh Willis, district leader of the miners' union, who has been missing for some time, is declared directly responsible. W. J. Lester, owner of the strip mine where the massacre took place, also is blamed for lack of judgment in attempting to operate the mine with nonunion labor in a locality so strongly unionized. The committee recognizes the fact that the spirit of a majority of the people of Williamson county is in sympathy with the acts of the mob and that a conviction is impossible there.

An interesting aftermath of the case is the purchase by the miners' union of the mine about which the trouble centered. This was done at a cost of about $750,000, paid from funds of the union. It is supposed the purchase was made to avoid civil suits against the organization for damages as a result of the riot. These suits could have been tried in other counties than Williamson where the union might have been heavily penalized on such evidence as was adduced in the murder trials.

Steel Ingot

Production in June Declines—Method of Computing Total is Revised

Following the establishment of a record output in May, production of steel ingots in June declined to a level which was the lowest since February, according to the production statistics compiled by the American Iron and Steel institute. Beginning with June the institute has adopted a new method of compiling its records, one of the more important features of the revision being that the proportion of the industry reporting monthly production figures has been increased from 84.15 to 95.35 per cent. As shown by the accompanying table, the institute now supplies, in addition to the total production of the reporting companies, the calculated monthly production of all companies the number of working days in the month and the approximate daily production of all companies. The column of figures at the extreme right shows the percentage increase or decrease of the daily production. For the purpose of comparison the institute has revised its production figures back to January, 1922.

On the new basis of computation, the output for June reported to the institute was 3,574,567 gross tons, as compared with 4,000,695 tons in May, the decrease being 426,128 tons. The calculated production of all companies in June was 3,748,890 tons, and a loss of 446,910 tons from the 4,195,800 tons of May. June had 26 working days as compared with 27 in May, therefore the average daily production of the country in May was 144,188 tons, as compared with 155,400 tons in May, the loss being 11,212 tons or 7.1 per cent. Following are the institute's revised production figures for the first six months of 1923 and all of 1922:

1922	Open-hearth	Bessemer	All other	Monthly production	Calculated monthly production all companies	No. of working days	Approximate daily production all companies	Change, per cent
	84.15 per cent of industry reporting							
Jan.	1,260,809	331,851	822	1,593,482	1,891,857	26	72,764	
Feb.	1,395,835	348,571	616	1,745,022	2,071,772	24	86,324	+18.6
March	1,918,570	451,386	795	2,370,751	2,814,667	27	104,247	+20.8
April	1,997,465	445,939	1,109	2,444,513	2,902,240	25	116,090	+11.2
May	2,214,774	494,893	1,474	2,711,141	3,218,794	27	119,215	+ 2.8
June	2,143,708	487,851	2,918	2,634,477	3,127,775	26	120,299	+ 0.8
Total 6 mos.	10,931,161	2,560,491	7,734	13,499,386	16,027,105	155	618,939	
July	2,020,572	464,047	2,485	2,487,104	2,952,806	25	118,121	— 1.7
Aug.	1,807,310	404,379	2,893	2,214,582	2,629,256	27	97,380	—17.7
Sept.	1,911,147	460,127	2,505	2,373,779	2,818,261	26	108,395	+11.3
Oct.	2,352,207	518,010	2,198	2,872,415	3,410,265	26	131,164	+21.0
Nov.	2,360,903	525,945	2,449	2,889,297	3,430,309	26	131,935	+ 0.5
Dec.	2,241 104	536,214	2,572	2,779,890	3,300,416	25	132.017	+ 0.1
Total	23,624,404	5,469,213	22,836	29,116,453	34,568,418	310	111,511	
1923	**95.35 per cent of industry reporting**							
Jan.	2,906,892	728,270	9,467	3,644,629	3,822,369	27	141,569	+ 7.1
Feb.	2,613,564	669,903	10,797	3,294,264	3,454,918	24	143,955	+ 1.7
March	3,046,309	799,525	12,841	3,858,675	4,046,854	27	149,883	+ 4.1
April	2,974,579	772,485	13,933	3,760,997	3,994,412	25	157,776	+ 5.2
May	3,136,558	847,418	16,719	4,000,695	4,195,800	27	155,400	— 3.1
June	2,821,239	737,845	15,483	3,574,567	3,748,890	26	144,188	— 7.1
Total 6 mos.	17,499,141	4,555,446	79,240	22,133,827	23,213,243	156	148,803	

Upon the basis of the 144,188-ton daily production in June and 310 working days in the year, the output during June was at the rate of approximately 44,698,000 tons per year. On a similar basis, the output of May was at the rate of 48,174,000 tons per year. During the first half of 1923 calculated ingot production of the country was 23,213,243 gross tons, or at a rate of about 46,500,000 tons for a whole year. The first half production of the whole country in 1922 was 16,027,105 tons.

Coal Stocks Increase; Would Last 30 Days

Washington, July 10.—Commercial stocks of bituminous coal on June 1 totaled about 41,000,000 net tons, sufficient for 30 days at the present rate of consumption, the geological survey estimates. This was an increase of 13.9 per cent over the 36,000,000 tons on hand on March 1. It compares with 63,000,000 tons stored on April 1, 1922, when the bituminous coal strike began, and 20,000,000 tons on June 1, 1920.

Stocks of bituminous coal at by-product coke plants on June 1 were sufficient for about 23 days' operation, compared with 19 days on March 1. At steel plants the accumulations were adequate for a run of 29 days, against 26 days on March 1. On June 1 the railroads had a 21-day supply stored, coal gas plants 75 days, electric utilities 45 days, other industrial plants 39 days, and retailers 29 days.

The June 1 figures do not include coal in the cellars of homes or coal on Great Lakes docks. On June 1 stocks on upper lake docks are believed to have totaled 1,591,000 tons. Unbilled coal in cars at mines on June 1 aggregated 421,000 tons. Coal in transit on June 1 ran up into "many million tons," the survey estimates.

More Alien Labor

Needed If 12-Hour Shift Is To Go, Analysis Shows

Washington, July 10.—Only a decided change in the character of immigration to the United States will assist E. H. Gary, chairman of the United States Steel Corp., and other steel producers in unearthing the 60,000 additional laborers deemed necessary to the termination of the 12-hour day in the industry.

The immigration quota for the year which began on July 1 is identical with that of the year just closed—357,803, including women, children and boys. With the northerly movement of negroes from the South the federal government has no direct contact. Mexico, the Philippines and Canada, the three countries mentioned by Judge Gary as possible sources of additional labor, all are beyond the pale of the 3 per cent immigration act.

From these three countries immigration to the United States is limited only by the literacy and physical and mental tests. Arrivals from the Philippines are few. An enormous number of Mexicans have crossed the Rio Grande but few have penetrated the North. It is illegal to import unskilled labor, but this has been done by agricultural interests in some northern states, and, it is reported, the immigration bureau is about to take action. By making a showing of shortage, manufacturers can bring in skilled foreign labor, but officials of the department of labor state unofficially that they do not see how Philippine and Mexican laborers can be classified as skilled in the iron and steel industry.

None of the larger European countries has filled its quota for even the present month. The maximum admitted from any country in one month is 20 per cent of the yearly quota, and up to today such smaller countries as Albania, Egypt, Austria, Syria, Spain, Russia, Palestine and Portugal have filled their July quota. The annual quota for Germany is 67,607 United Kingdom, 77,342, France 5729, Sweden 20,042, Russia 24,405, Norway 12,202, Czechoslovakia 14,357, Austria 7342, Hungary 5747, taly 42,057, Denmark 5619, and Jugoslavia 6426.

The one bright spot in the immigration outlook is the increasing percentage of males arriving. In the 11 months ended with May, a grand total of 279,891 males including boys arrived. In this same period 51,631 had returned, making the net male gain 228,261.

IRON TRADE REVIEW

Registration Applied for

The Authority of Industry National and International

Published Every Thursday by

THE PENTON PUBLISHING CO., CLEVELAND, O.

Member, Audit Bureau of Circulation. Associated Business Papers, Inc., and National Publishers Association

BRANCH OFFICES

BOSTON - - - - - - - - - - - - 426 Old South Bldg.
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BIRMINGHAM, ENG. - - - - - - - - Prince's Chambers
LONDON, ENG. - 2-3 Caxton House, Westminster, S. W. 1
PARIS, FRANCE - - - - - 23 Rue de la Bienfaisance

Cable Address, IROTRAPEN, London, IROTRAPI, Paris

Subscription, United States, Cuba and Mexico, $6 per year. Canada, $8.50 per year. Great Britain and other countries, £2:0:0 per year.

Entered at the Postoffice at Cleveland as Second Class Matter
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Steel Industry's Position Unchanged

PRESIDENT HARDING'S announcement the past week that he has exacted the definite pledge of the employers promising final action, has been hailed by the newspapers and the public generally as the determining stroke insuring the abolishment of the 12-hour day in the steel industry. Doubtless this is true. Similarly, the impression has been general that this development has been due to some important concession by the steelmakers granted as a result of the President's good offices. This is not the case.

President Harding in his letter of June 18 to Judge Gary as president of the American Iron and Steel institute commented upon the report of the 12-hour day by the latter organization issued May 25 and declared himself as follows:

"I am wondering if it would not be possible for the steel industry to consider giving the undertaking that before there shall be any reduction in the staff or employes in the industry through any recession in demand for steel products or at any time when there is a surplus of labor available that then the change should be made from the two-shift to the three-shift basis."

Judge Gary in his reply to the President of June 27 which is the basis for the President's expressed gratification to the public, said:

"Without an unjustifiable interruption to operations, the change cannot be effected overnight. It will involve many adjustments, some of them complicated and difficult but we think it can be brought about without undue delay, when as you stated, 'there is a surplus of labor available'."

The steel industry's present position on the 12-hour day set forth in the report to the American Iron and Steel institute which it was definitely stated was not a final one, contained these concluding words:

"If labor should become sufficient to permit it, the members of this committee would favor entirely abolishing the 12-hour day, provided the purchasing public would be satisfied with selling prices that justify it, and provided further that the employes would consent and that industry generally including the farmers would approve."

Clearly the steel industry has not changed its position nor committed itself to any other course than that which it has consistently and voluntarily approved in the past. Judge Gary's statement to the President in substance is the same as that adopted by the industry in the iron and steel institute report.

Had the steel manufacturers understood more about mass psychology and been more concerned with effects than with practical aspects of the reduced work-day, they would have spared themselves much of the recent criticism to which they have been subjected. There is no denying the institute report on the 12-hour day was not phrased for the best and in some respects was badly arranged. For superficial impression the industry failed to put its best foot forward.

The President has proved himself a much better hand at winning favorable publicity with the same set of facts than the steel industry.

Pittsburgh's Capacity Still Leads

PITTSBURGH and its immediate environs constituting the Pittsburgh district retain a very commanding lead in total iron and steel capacity over every other section of the country. This was set forth by a new and interesting tabulation of the country's geographical division of steel capacity based upon returns of individual companies to the American Iron and Steel institute and presented as evidence by the defense in the Pittsburgh basing point hearing at Chicago last week. Of total rolled steel capacity, which represents the true index of marketable tonnage, Pittsburgh is shown to possess 27.7 per cent, Chicago and the West 19.8 per cent and the Philadelphia district 14.4 per cent. Other sections follow in order. Out of a grand total of 43,157,845 tons for the entire country, Pittsburgh is credited with 11,962,000 tons, Chicago and the West with 8,568,300 tons and Philadelphia with 6,229,460 tons.

It has been persistently asserted by the steel

producers that the method of basing prices on Pittsburgh is not an arbitrary one but results from the operation of the law of supply and demand. They have contended that no district except Pittsburgh is self-sustaining in that it produces as much tonnage as it consumes. Therefore, each district must look to Pittsburgh for a portion of the tonnage it needs and it is this latter bought in the open market that fixes the price for the whole industry on a Pittsburgh basis.

The figures of steel capacity by districts now made available for the country completely for the first time show that the Pittsburgh district can produce something like 39.6 per cent more tonnage than Chicago and the West which is the territory immediately involved in the present action being carried on by the federal trade commission. If the figures of steel consumption now could be made available for the respective zones, the productive limits of which have been fixed, the logic and accuracy of such reasoning on the part of the steel companies could be more definitely tested. The steel industry as well as the country needs such additional information. However, since statistics of consumption are much more difficult to obtain than those relating to production, it is unlikely that these further illuminating facts can be brought forth to bear upon the present controversy.

Government Operates at Surplus

FOR the first time since the war the national government has closed the fiscal year ended June 30 with a surplus. Preliminary estimates place the amount at $310,000,000. This showing is all the more remarkable when it is recalled that 12 months ago it generally was expected the year would result in a treasury deficit of nearly $825,000,000.

The differences of $1,133,000,000 between the estimated deficit and the actual surplus is accounted for by two facts. One is the new budget system which has effected a saving in the operation of the government. The other is the enormous and wholly unexpected increase in revenues. Receipts increased by $767,000,000 while estimated total expenditures were cut by $366,000,000.

The gain in receipts was occasioned by an expansion of $213,000,000 in customs. This reflected the rising tide of imports which has resulted from the industrial recovery in this country. Internal revenue is increased by $243,000,000, due to the larger incomes and business profits.

Another important phase of government finance has been the reduction of the public debt by one-fifteenth in the past two years. The government now owes only $22,400,000,000 to its security holders, or $1,600,000,000 less than it was in their debt April 1921. For more than two years the people of this country have been turning over to the national treasury more than $750,000,000 annually for debt reduction.

In spite of the more favorable treasury position there is no present indication of relief from the onerous burden of taxation. Already leading congressmen are predicting that the soldiers bonus will be passed and other means found to absorb any loose funds in the public treasury. Like many individuals governments usually live up to, or ahead, of their incomes. It remains to be seen how effective the budget system will be in curbing the generosity and extravagances of congress.

Pig Iron Undergoes Readjustment

PIG IRON production is in excess of consumption and producers now generally realize that the only way to check the downward tendency of prices is to curtail output. Some furnaces have been put out of blast but as a rule, producers are trying to stick it out as long as possible. While they realize that more furnaces must be blown out, most of them are leaving it to the other producers to take such action.

What has happened all through the country is well illustrated by the developments in the East. Since March 1, and up to July 1, there was a gain in active furnaces of 2 in Central Pennsylvania, 4 in New York state, 2 in New Jersey, 8 in Eastern Pennsylvania and one in Virginia. Since July 1, one New Jersey furnace has been retired. This makes a net gain since March 31 of 16 active furnaces which supply their output to the eastern territory in whole or in part. As a result of the increased production in the East, stocks of iron have been accumulating at eastern furnaces.

Investigation of the factors in the pig iron situation are far from unfavorable. It is true that there has been a slight shrinkage in consumption by the foundry industry but this apparently has been due to labor shortage rather than to any appreciable falling off in business. Foundries right and left are being forced to cancel orders due to the fact that they are unable to get out the production they had expected. The whole trouble in pig iron seems due to the fact that production is in excess of consumption.

Undoubtedly the curtailment of production will receive more impetus now that prices have reached a level which is too low to permit of profitable operation of many furnaces. In the East, foundry iron has been sold at $27, furnace, for the base grade. Probably none of the eastern furnaces are able to produce iron at less than $26 when they take all their cost factors into account. With a number of them the cost is put as high as $29. Elsewhere a good many producers are finding their costs bring them a loss on the present selling prices. Thus curtailment of pig iron production rapidly is becoming a matter of economic necessity for many furnaces.

More Confident Mood Appears

Security Market Indicates Changing Sentiment—Pessimism Is Less Pronounced—Advance of British Bank Rate Designed To Check Decline of Sterling—Car Buying Falls Off—Dividends Are Increased

BY JOHN W. HILL, FINANCIAL EDITOR

TWO developments in the financial world were of exceptional interest during the past week. One was the appearance of a less pessimistic tone in the financial markets. The other was the increase in the discount rate of the Bank of England. In former years when the English bank rate was advanced it was the signal of a world-wide stringency of money. Such is not the case this time. The action was taken to check the decline in sterling which has fallen to about 20 cents on the pound from the high point of the year.

With the official bank rate in London at 3 per cent and the open market rate even less, many borrowers from the United States were attracted. As a result, a large amount of funds were being transferred from London to New York. That created a large supply of sterling bills for the foreign exchange market to absorb. The decline resulted. Since the bank rate was advanced sterling has stiffened. Other European exchanges remain weak, reflecting the Ruhr deadlock. Fundamental economic conditions, however, appear to be on the mend in Europe outside of Germany.

The action of the stock market recently has indicated some lessening of the pressure for drastic liquidation. This changing mood has come with the turn of midyear. It is now generally recognized that present conditions do not warrant expectations of a severe decline in trade or in values. Some slowing down in the rapid rate of activity to more normal levels appears probable. That does not mean that collapse impends.

Faith in the outlook is indicated by the fact that since the first of the year 359 important corporations have increased their dividend disbursements through declaring extra payments, advancing the regular rate or paying up arrearages. Moreover it is estimated that all the banks of the country have augmented their holdings of securities since May 2 by $350,000,000. With ample funds on hand banks are manifesting their confidence in present values by picking up investment bargains.

The success of the railroads in meeting unprecedented spring traffic requirements and at the same time creating a surplus of cars is resulting in some decrease in the purchase of new cars. As shown by the Business Trend June car awards were only 1785 against 2200 in May and 18,250 in June 1923. Half year awards were 80,580 against 100,300 in the first six months of 1922. The demand for rails continues strong.

Wholesale prices continue to fall. R. G. Dun's weighted index of 300 commodities declined 1¼ per cent in June. It is now 56 per cent over 1914 and 18 per cent above 1921.

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The Barometer of Business

WEEKLY COMPARISON

	Last week	Week before	One mo. ago	One year ago	Average 1913
Business failures	241	292	334	306	300
Cash ratio Fed. Res. System	74.4	76.9	75.7	76.8	...
Loan rate. 4-6 Mo. N. Y. (per cent)	4¾-5	5	4¾-5	5	5¾-6
Aver. 25 ind'l shares	$102.46	$100.64	$109.71	$99.06	$58.19
Aver. 25 rail shares	$58.22	$56.52	$62.65	$60.58	$82.95
Av. 40 bonds	$76.14	$76.14	$77.86	$80.51	$93.00
Car loadings (week ended June 30)	1,021,770	1,002,740	1,041,029	876,896	891,621
Bank debits 244 cities (000 omitted)	$10,089,465	$9,405,439	$10,183,000	$8,972,828	.....

*1920

FOREIGN EXCHANGE (Demand)

	Normal	June 30 (close)	Week before	Month ago	Year ago
Sterling	$4.86	$4.56	$4.58	$4.61	$4.44
Franc	19.3c	5.89c	6.04c	6.44c	7.81c
Lira	19.3c	4.26c	4.40c	4.64c	4.41c
Marks	23.8c	0.0003c	0.0005c	0.0012c	0.19c

MONTHLY COMPARISON

	June	Month before	Year ago	Monthly average 1913
Dodge building awards in 27 states	*$380,719,000	$358,693,000	$362,590,000	$71,450,000
Business failures:				
Number	1358	1530	1740	1336
Liabilities	$28,678,276	$41,000,000	$38,242,000	$22,732,000
Exports	*$319,000,000	$325,449,000	$307,568,000	$207,000,000
Excess of gold imports	*$44,531,887	$8,533,000	$5,587,299	†$630,716
Bureau of Labor Price Index	156	159	148	100
Bradstreet's Price Index	141.5	144.3	131	100
Economist's British Price Index	4301	4412	4389	2717
Cost of Living Index	160.3	159.1	154.9	100
New incorporations	$1,403,336,000	$817,229,000	$297,557,000	$172,301,000
Railroad net earnings	*$89,999,600	$83,197,800	$62,069,000	$59,900,000

*May. †Monthly average excess exports.

The Business Trend

July 12, 1923

TRADE TODAY, TOLD BY IRON TRADE REVIEW CHARTS

GENERAL SITUATION—Demand in most lines on hand-to-mouth basis, as buyers' still lack confidence; consumption continues heavy and business activities have had no important recession, despite some summer letdown; prices falling gradually; no indication of precipitate drop.

INDUSTRIAL PRODUCTION—June pig iron daily rate of output of 122,450 tons was highest on record save for May; decline first since last summer; iron output gains 348 per cent over 1921 low.

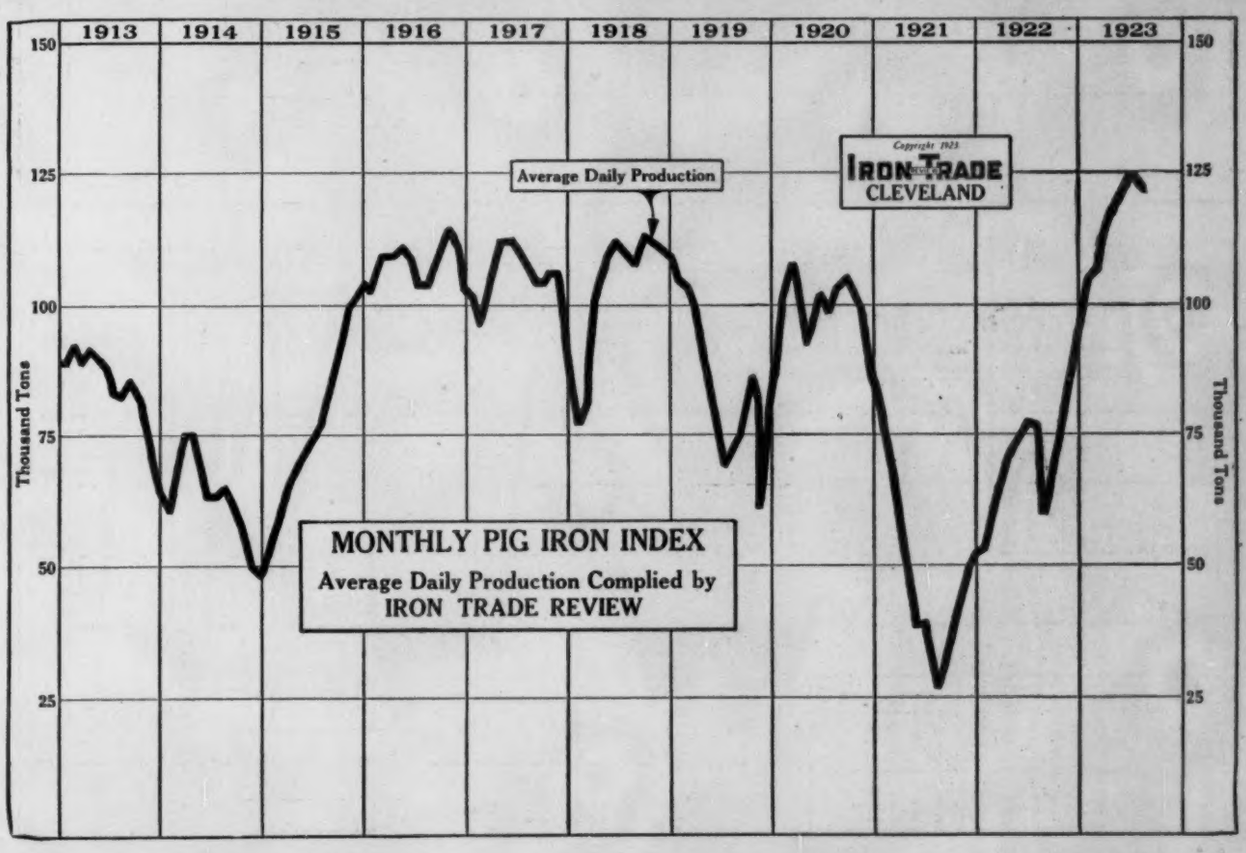
IMMIGRATION—Opening of new fiscal year on July 1 brings fresh rush of immigrants to United States; all of last year's quotas exhausted in recent months; Europeans attracted by good times and high wages.

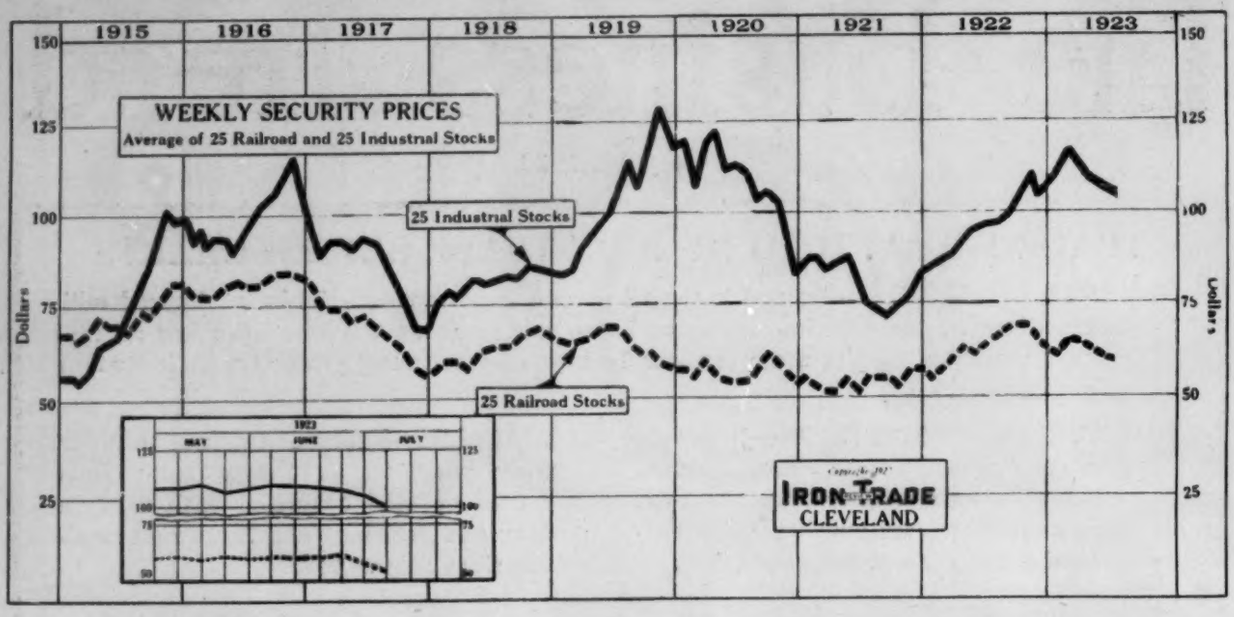
STEEL FOREIGN TRADE—May exports of iron and steel of 195,535 tons highest since June 1922; imports of 75,840 tons lowest since August, save for February; imports more and exports less than one year ago.

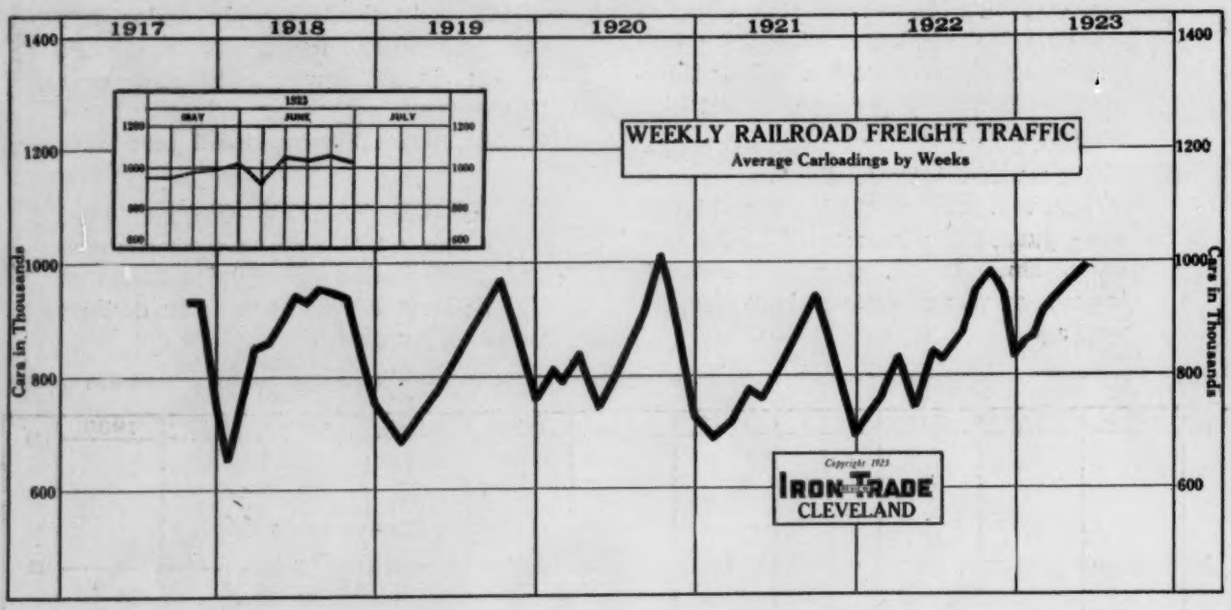
CAR ORDERS—Railroads continue to lower their purchases of freight cars; June orders of 1785 compared with 2200 in May and 18,250 in June 1922; total smallest since August 1922.

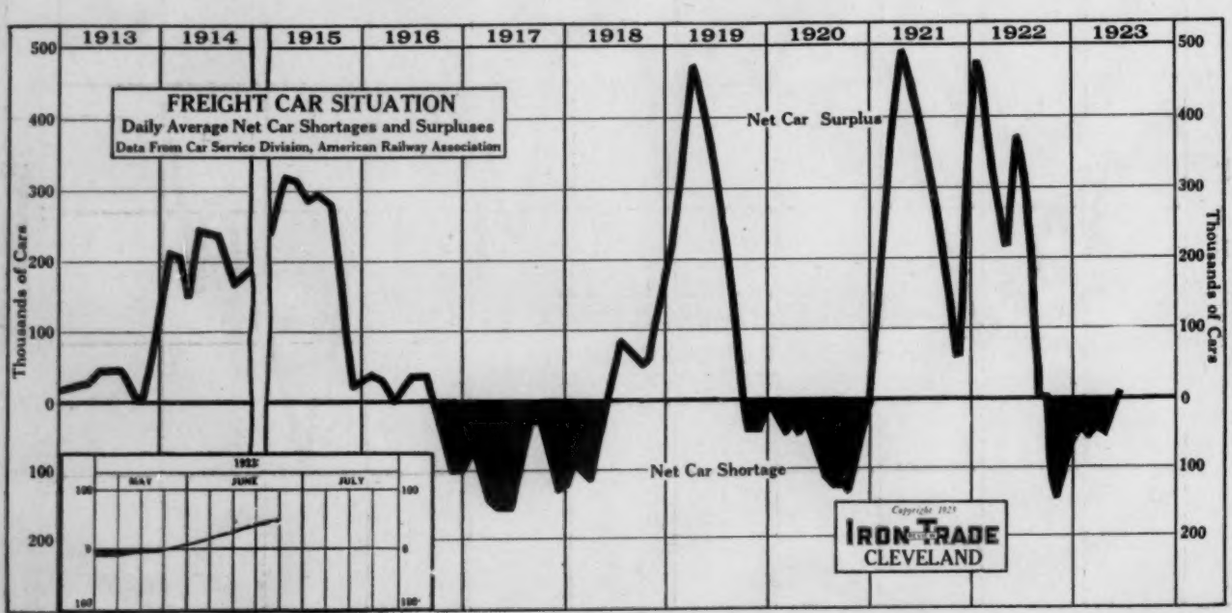
FREIGHT TRAFFIC—Weekly carloadings exceed 1,000,000 for fourth time this spring; freight movements now near 1920 autumn peaks; net surplus of cars reaches 46,000 in week ended June 23.

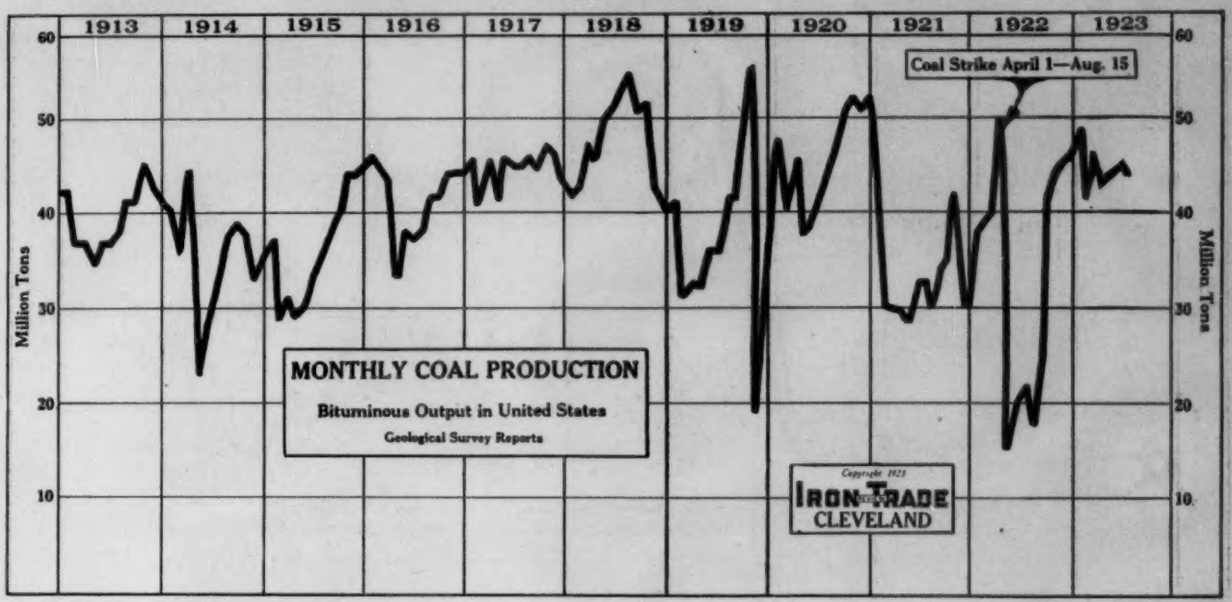
STEEL PRICE PARITY—Finished steel prices firm, while pig iron weakens; general steel market continues uniform at highest level of year; basic iron declines about 19 per cent.




1915
1916
1917
1918
1919
1920
1921
1922
1923
WEEKLY SECURITY PRICES
Average of 25 Railroad and 25 Industrial Stocks
25 Industrial Stocks
25 Railroad Stocks
Dollars
150
125
100
75
50
25
1923
MAY
JUNE
JULY
IRON TRADE
CLEVELAND


1917
1918
1919
1920
1921
1922
1923
WEEKLY RAILROAD FREIGHT TRAFFIC
Average Carloadings by Weeks
Cars in Thousands
1400
1200
1000
800
600
1923
MAY
JUNE
JULY
IRON TRADE
CLEVELAND


1913
1914
1915
1916
1917
1918
1919
1920
1921
1922
1923
FREIGHT CAR SITUATION
Daily Average Net Car Shortages and Surpluses
Data From Car Service Division, American Railway Association
Net Car Surplus
Net Car Shortage
Thousands of Cars
500
400
300
200
100
0
100
200
1923
MAY
JUNE
JULY
IRON TRADE
CLEVELAND


1913
1914
1915
1916
1917
1918
1919
1920
1921
1922
1923
Million Tons
Coal Strike April 1—Aug. 15
MONTHLY COAL PRODUCTION
Bituminous Output in United States
Geological Survey Reports
Copyright 1923
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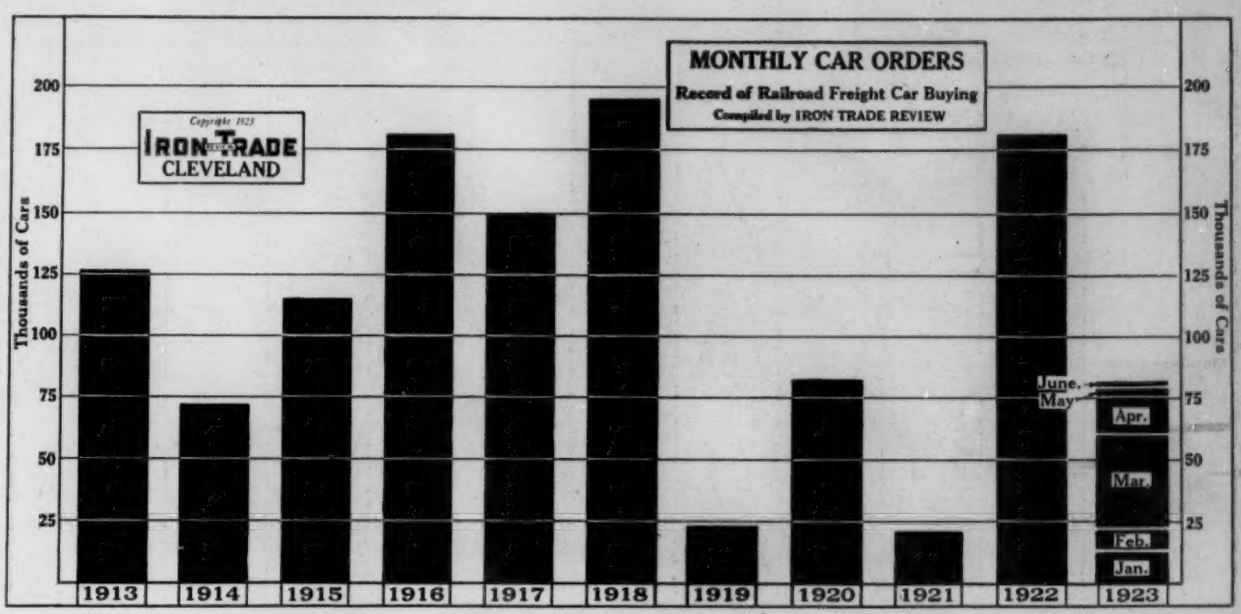
MONTHLY CAR ORDERS
Record of Railroad Freight Car Buying
Compiled by IRON TRADE REVIEW
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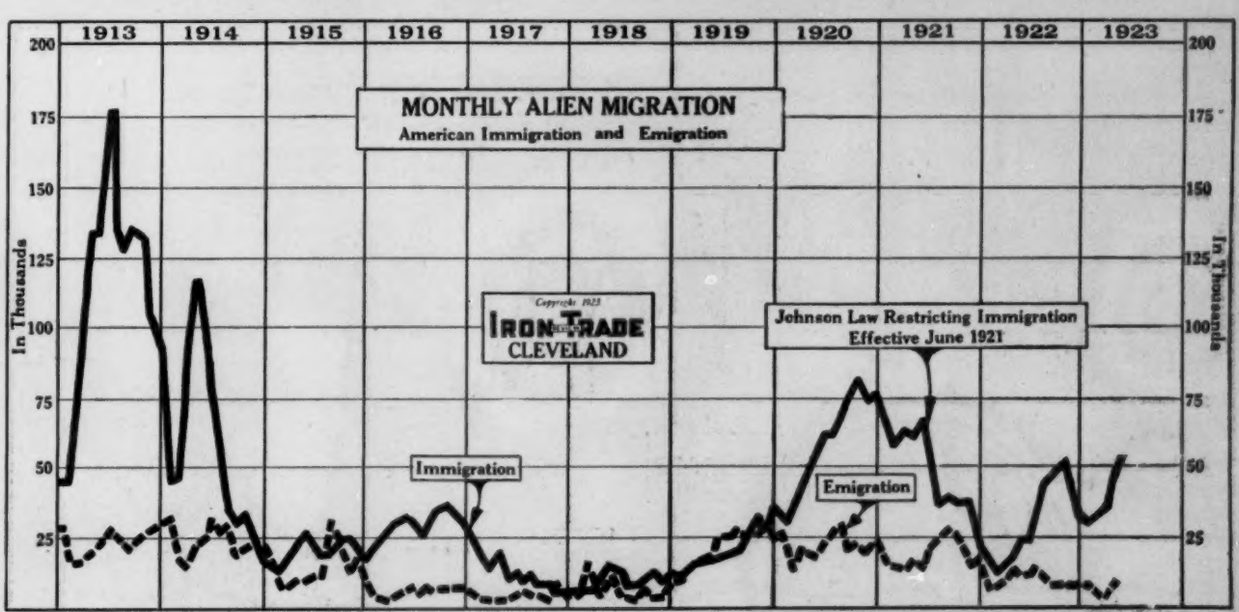
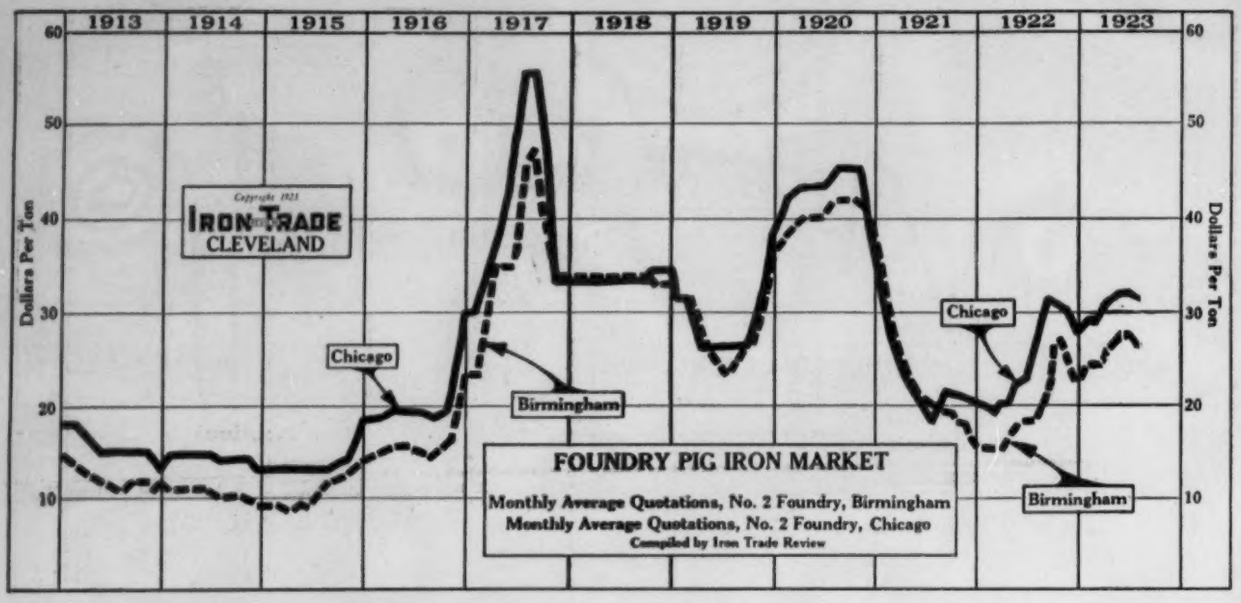
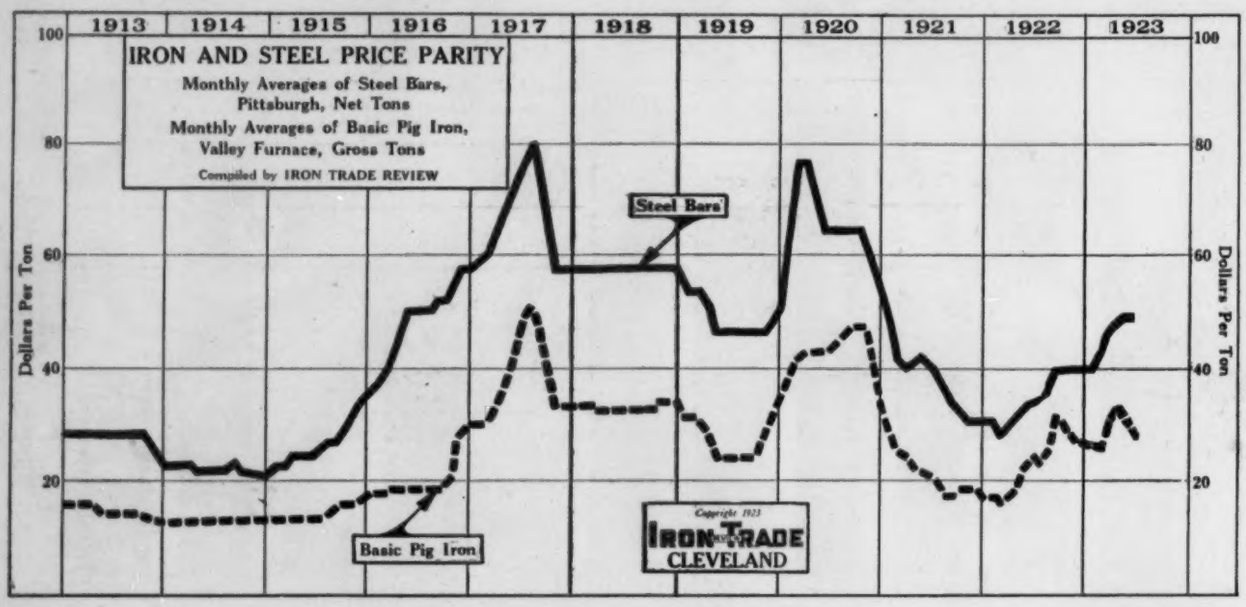
IRON TRADE
CLEVELAND
Thousands of Cars
June.
May
Apr.
Mar.
Feb.
Jan.
1913
1914
1915
1916
1917
1918
1919
1920
1921
1922
1923


MONTHLY ALIEN MIGRATION
American Immigration and Emigration
Copyright 1923
IRON TRADE
CLEVELAND
In Thousands
Johnson Law Restricting Immigration
Effective June 1921
Immigration
Emigration


1913
1914
1915
1916
1917
1918
1919
1920
1921
1922
1923
Dollars Per Ton
Copyright 1923
IRON TRADE
CLEVELAND
Chicago
Birmingham
Chicago
Birmingham
FOUNDRY PIG IRON MARKET
Monthly Average Quotations, No. 2 Foundry, Birmingham
Monthly Average Quotations, No. 2 Foundry, Chicago
Compiled by Iron Trade Review


1913
1914
1915
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1918
1919
1920
1921
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1923
Dollars Per Ton
IRON AND STEEL PRICE PARITY
Monthly Averages of Steel Bars, Pittsburgh, Net Tons
Monthly Averages of Basic Pig Iron, Valley Furnace, Gross Tons
Compiled by IRON TRADE REVIEW
Steel Bars
Basic Pig Iron
Copyright 1923
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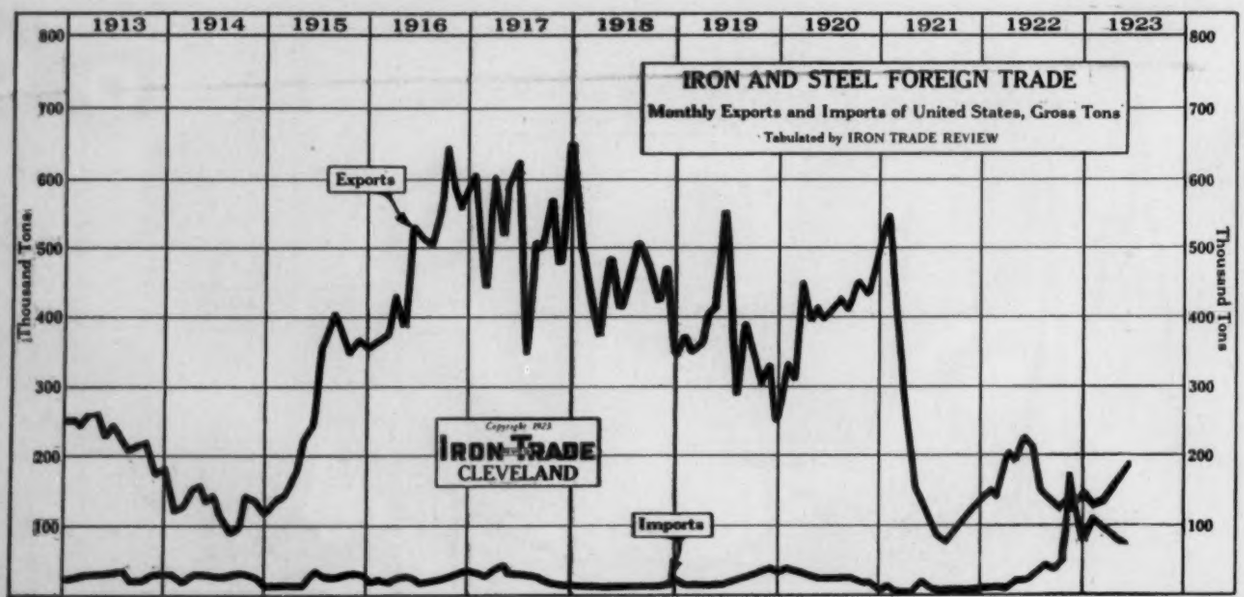

1913
1914
1915
1916
1917
1918
1919
1920
1921
1922
1923
Thousand Tons
IRON AND STEEL FOREIGN TRADE
Monthly Exports and Imports of United States, Gross Tons
Tabulated by IRON TRADE REVIEW
Exports
Imports
Copyright 1923
IRON TRADE
CLEVELAND

Test Slag for Furnace Reaction

Heats of Basic Steel Are Produced Using Limited Quantities of Limestone in the Charge—Basicity of a True Melting Slag Not Increased by Addition of Iron Oxide—Lime Changes Fundamental Composition

BY T. P. COLCLOUGH

IN THE past, the study of the slags produced in the manufacture of basic steel has proceeded mainly along two lines. One is the investigation of the mineralogical constituents of the cold, solidified material in the endeavor to identify the compounds present. This method is both difficult and unsatisfastory; difficult, because of the nature of the methods of preparation of the samples and the difficulties of identification of the minerals present, and unsatisfactory, because there is little or no direct evidence to show whether the compounds found had any existence in the liquid slag, or have merely been formed by selective crystallization during freezing. This method, on the other hand, is of considerable utility in the study of the values of different slags as fertilizers.

The alternative method is to take samples of slag under stable conditions in the furnace, and to endeavor to allocate chemical compositions to the constituents found. This method, where slag samples alone are taken, appears to be unsound unless the precise condition of the bath, at the time the sample was taken, be known. The nature of the slag present on the surface of the metal is certain to vary from time to time according to the variation in "feeding," and also will depend upon the nature of the metal with which it is in contact. The slag and metal, must be considered together.

Find Nature of Melting Slag

The principle adopted in the following tests was to study the effect of slags of different composition on the impure metal of the bath and, by studying the relative rates of elimination of the various elements, to form a concept of the reactions which occur and of the nature of the products formed.

All the tests were carried out at the Park Gate Iron & Steel Co., Rotherham, in open-hearth furnaces of 50 to 60 tons capacity, using mixtures of scrap and hot metal from an active mixer. Limestone was added with the charge in all cases, but in some cases no oxide was added until the desired type of slag had been obtained, that is, some time after the charge was melted.

To determine the nature of melting slags, a number of heats were worked with a limited quantity of limestone in the charge. In every case a perfectly definite constitution of slag was obtained. During the melting period considerable oxidation of metal is brought about by the action of the furnace gases. The oxide of iron thus formed removes first the whole of the silicon from the metal; the resulting silica forms, with the lime, the basis of the slag. The surplus oxygen from this preferential oxidation attacks the phosphorus in the bath up to a definite limit; beyond this it oxides the carbon and manganese.

Table I shows a series of melting samples of slag and metal taken from furnaces working under a variety of conditions, the charges varying from 80 per cent of hot metal and 20 per cent of scrap to 50 per cent of each. Wide variations in the composition both of slag and metal are evident, the silica varying from 10.6 per cent to 20.4 per cent, and the phosphoric oxide from 11.5 per cent to 22.2 per cent. It will be noted that these constituents vary in inverse ratio, and the rational analysis of the slags shows a definite relation between the various oxides. The relation found shows that in a melting slag each molecule of phosphoric oxide is associated with four molecules of lime, while each molecule of silica requires two molecules of base, which may be CaO, MgO, MnO, or, to a small extent, FeO.

This series, therefore, verifies the accepted view that the fundamental slag in a basic open-hearth furnace is essentially composed of molecules of phosphate of lime, $4CaO, P_2O_5$, and molecules of monosilicate, $2RO,SiO_2$, RO being either CaO, MgO, MnO, or FeO, together with a little free oxide iron in solution. In no case has it been found possible to obtain a slag without free oxides of iron, because of the constant oxidizing effect of the flame.

It is clear from the above that the relative amount of phosphorus present in the bath of melting will depend upon the relation between the amount of silicon present in the metal charged and the weight of lime put in with it. If the metal possess a high silicon content while the lime added be small, the bath at melting will have a high phosphorus content, and vice versa.

Iron Oxides Affect Slags

Tests made show that if the silicate be free from oxide of iron, the fundamental slag indicated above is quite stable, and can be maintained in the presence of the reducing elements carbon and phosphorus. The addition of further oxide of iron to the slag does not appear to have any direct effect on its constitution; the oxide merely passes into solution. The only alteration is that a little more manganese may be oxidized to MnO, with a correspondingly slight increase in the basicity of the slag. This action is slight, and practically the whole of the oxide added is available for the oxidation of the carbon, which is eliminated rapidly, while the slag approaches more nearly to its simple constitution, as at melting.

If lime be added to a melting slag, a fundamental change takes place in its composition. It appears that manganese silicate is unstable in the presence of free lime. As a result, the lime added tends to replace manganous oxide in the silicate and to form the simple compound $2CaO,SiO_2$, and free oxide of manganese.

That a change occurs in the state of the oxide of manganese is shown by the fact that so long as lime is not added, the manganese content of the bath either remains constant or falls slightly, while on the addition of lime there is an immediate reduction of manganese oxide and an increase of the manganese in the metal; that is, the MnO has been brought into such a state as to be capable of reduction by carbon or phosphorus. This is an exact parallel of the action of lime added to an acid slag, when ferrous oxide is dis-

From a paper presented at the London meeting of the Iron and Steel institute, May 10-11. The author is connected with the Park Gate Iron & Steel Co., Rotherham, England.

placed from its combination with silica and made capable of reduction.

With the addition of more lime than is necessary, with MgO to combine with the whole of the P_2O_5 and SiO_2 present, it is probable that the excess lime forms a fairly stable compound with ferric acid. To test this, two heats were worked with a slag rich in lime but low in oxide of iron.

In view of the fact that Fe_2O_3 is not the stable form of iron oxide at steelmaking temperatures, and is easily reduced, one cannot conceive of its existence in the free state in the presence of baths of metal as rich in oxidizable elements as those shown.

Few Experiments in Tapping

Owing to the danger of the furnace, and the difficulty of keeping the bath under tapping conditions, it has not been found advisable to experiment at this stage. It can be stated that in order to prevent any danger of the return of phosphorus to the metal, the slag aimed at should be a mixture of calcium phosphate and monosilicate of lime, with the other constituents in solution.

Wilson, in his paper on basic slags, appears to hold the view that the composition of the slag has little or no effect upon the relative rates of oxidation of carbon and phosphorus, for he says: "The oxidation of silicon, phosphorus, and manganese gives exothermic reactions, and these reactions proceed at the lower temperature and in the earlier periods of the charge. Given the required oxygen . . . the condition of the slag will have no direct influence on these reactions," while "carbon oxidation gives rise to a strongly endothermic reaction . . . and this reaction is limited to the higher temperatures in steelmaking." How far this fails to represent the true nature of the reactions which occur may be seen from the ensuing data.

It is common experience that in many heats where low-sulphur stock is available, and the use of spar slags avoided, the whole of the carbon is eliminated while the phosphorus is still high. When this occurs the bath usually is cold, the carbon has been oxidized at a low temperature, and quantities of carbon as cold pig must be added to cause the circulation of the metal which is necessary to secure the removal of the remaining phosphorus and attain the necessary heat for tapping.

To determine the effect of slag composition on the elimination of these elements, tests were made in which the additions of lime and oxide were carefully regulated. Two series of tests were made, and typical heats of each type are given.

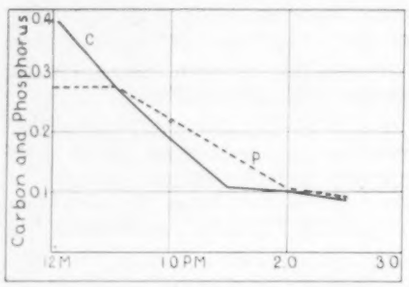


FIG. 1—AS BASICITY OF SLAG AND OXIDATION OF PHOSPHORUS INCREASE, CARBON REMAINS CONSTANT

In the first series no oxide was put in with the charge, and the quantity of limestone added was limited. It was found that the slag formed, when the charge was completely melted, was a mixture of phosphate of lime and monosilicates of the various bases, with a little free iron oxides, both ferrous and ferric. After melting, small amounts of oxide were added but no lime until nearly 1 hour had elapsed. During this period the early, low temperature period, the phosphorus and manganese remain constant, while carbon is eliminated. It was noted that the first two slags corresponded almost exactly with the composition x molecules of $4CaO,P_2O_5$ with y molecules of monosilicate: the slag is saturated with phosphorus and none can be removed from the metal. At this stage a little limestone was added, and some action on the banks occurred. As a result of this slight increase of basicity, the third sample showed that the oxidation of phosphorus has begun. In the fourth, fifth and sixth samples, the basicity of the slag increases rapidly, and the oxidation of phosphorus proceeds correspondingly, while the carbon remains practically constant as illustrated in Fig. 1. This, and its parallel heats, show that the relative rates of oxidation of carbon and phosphorus in the open-hearth process depend primarily upon the state of the slag and not upon the temperature. The amount of phosphorus oxidized depends entirely upon the amount of oxide of phosphorus that the slag can hold, and this in turn is fixed by the excess of base above that required to form a monosilicate with the silica present.

If, therefore, oxide of iron be added to a true melting slag, the basicity is not increased, no more phosphorus can be absorbed, and the whole of the added oxide is free to oxidize the carbon of the metal, even in the early stages, and in the presence of phosphorus.

Test Made of Sand Action

To put this question of saturation composition to a final test advantage was taken of the action of sand, well known to steelmakers, thus throwing phosphorus back from the slag into the metal. In the first three samples it was noted that the slag at melting was saturated with phosphorus, and for the first 2 hours both carbon and phosphorus were oxidized, the slag becoming almost saturated. In the fourth sample there was a return of manganese from the slag to the metal, and simultaneously there was a return of phosphorus likewise from slag to metal. This clearly demonstrates that the manganese oxide must be in combination with the acid constituents of the slag, and that the slag was at its saturation composition. A small quantity of sand was then added to increase the acidity of the slag. Thus in the fifth sample more phosphoric oxide was reduced to phosphorus, and the amount reduced was exactly that necessary to bring back the slag to the original saturation composition. The phosphorus of the metal was kept

Series of Melting Samples of Slag and Metal

Charge No.	Metal C.	Si.	S.	P.	Mn.	Slag SiO_2	FeO.	Fe_2O_3	MnO.	CaO.	MgO.	P_2O_5.	P_2O_5	Molecular analysis of slags: CaO for $4CaO,P_2O_5$	SiO_2	RO required for $2RO\,SiO_2$	CaO, MgO, and MnO.	Excess of base.	FeO.	Fe_2O_3.
1	1.4	trace	0.033	0.32	0.42	13.8	5.0.	2.0	10.52	35.8	7.0	19.25	0.1355	0.5422	0.23	0.46	0.4201	—0.040	0.070	0.0125
2	1.69	.....	0.021	0.47	0.67	11.6	4.56	1.43	10.52	36.2	7.1	22.24	0.1566	0.6264	0.193	0.386	0.3476	—0.038	0.063	0.009
3	1.20	.....	0.028	0.42	0.58	12.2	4.1	2.3	10.44	36.4	6.52	21.56	0.1518	0.6072	0.2033	0.4066	0.3578	—0.0488	0.0507	0.014
4	0.37	.....	0.050	0.268	0.34	15.2	3.5	4.14	9.34	33.4	10.14	18.32	0.129	0.516	0.253	0.506	0.468	—0.038	0.048	0.025
5	0.74	.....	0.062	0.46	0.35	20.4	5.53	2.07	11.74	36.8	7.24	11.57	0.0815	0.3260	0.340	0.680	0.6774	—0.0026	0.0077	0.0013
6	0.81	0.02	0.028	0.37	0.38	10.6	3.9	3.2	11.34	38.0	5.7	21.34	0.1503	0.6012	0.1766	0.3533	0.3799	+0.0266	0.0542	0.020
7	0.87	trace	0.032	0.32	0.39	11.4	3.5	5.3	8.0	37.0	6.8	19.72	0.1388	0.5545	0.19	0.38	0.3888	+0.0088	0.0049	0.0033

constant for the seventh and eighth samples after which lime was added and the usual elimination of phosphorus effected.

In every sample the slag had the composition of a true melting slag, $4CaO,P_2O_5$, $2RO,SiO_2$, and the amount of phosphorus present in the slag was definitely fixed by the amount of available base in the slag. Fig. 2 shows the relative rates of oxidation of the carbon and phosphorus, and from this figure it will be seen how closely the phosphate of the slag follows the amount of available base, the slight discrepancy of the fifth sample probably being due to the time factor, equilibrium not having been established. These figures seem definitely to prove that such a slag cannot contain any bisilicate, as suggested by Dichmann in his equations for furnace reactions, and by Wilson in certain of his slags. If the bisilicate of lime, CaO,SiO_2 were stable under these conditions, more base would be available to combine with the P_2O_5, and more phosphorus would be oxidized. In view of the return of phosphorus to the metal, it seems certain that the bisilicate cannot be present. The above heats show that there is a minimum critical value for the basicity of a slag, below which no further oxidation of phosphorus can occur.

If lime be added to a slag of such critical basicity, the oxidation of carbon and phosphorus proceed simultaneously. In a heat treated in this manner the slag at melting was not quite saturated with phosphorus, a slight excess of base being present. In the first hour 600 pounds of fluorspar and limestone, but no oxide, were added. Oxidation of both carbon and phosphorus proceeded at the expense of the oxide of iron produced by the action of the furnace gases and the manganese oxide of the slag.

Change in Reaction Rate Occurs

After the third sample limestone and scale were added, and at once a change in the rate of reaction occurred. The carbon remained constant at 0.31 per cent until the phosphorus was almost completely eliminated, falling to 0.05 per cent when the slag was removed, as illustrated in Fig. 3. It would, therefore, appear that there is a second critical composition of a slag. Whether this, like the former, coincides with the formation of some definite compound is doubtful, but examination of the data suggests that it occurs at the point where the CaO content of the slag is sufficient of itself to form the phosphate and monosilicate of lime.

To test this, several heats were tried. In each case extra lime was added with the charge, and spar and limestone, but no oxide, were fed immediately after melting. Throughout the heat the lime in the slag was sufficient to unite with the whole of the SiO_2 and P_2O_5 as soon as it could be formed. As a result, thermochemical considerations are given full play, and are of first importance in determining the reactions which will occur. Hence there is a great demand for oxygen from the phosphorus, this element having the highest

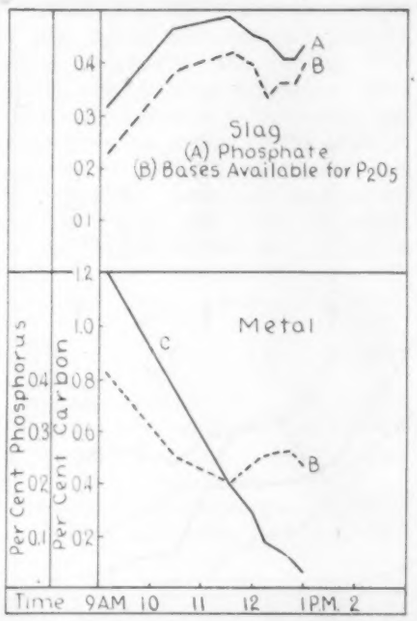


FIG. 2—RELATIVE RATES OF OXIDATION OF CARBON AND PHOSPHORUS

heat of oxidation, so much so, that not only is the whole of the FeO of the slag removed but some of the MnO also is reduced, while the carbon remains constant until the phosphorus is reduced to 0.1 per cent. The oxidation of phosphorus then slows down by virtue of its low concentration, and the oxide added becomes available for the elimination of carbon and manganese.

These tests indicate that the composition of the slag plays a fundamental part in determining the reactions which may occur in the furnace. Further, that there are two critical compositions, first, where the bases are only sufficient to form the slag $4CaO,P_2O_5$, with $2RO,SiO_2$, whereupon no further oxidation of phosphorus can occur, the whole of the available oxygen uniting with the carbon; and second, where the lime content of the slag is sufficient to provide the whole of the base necessary in the first, whereupon phosphorus alone is oxidized, the carbon not being attacked, but some manganous oxide being reduced. Within these two limits the oxidation of all three elements proceeds simultaneously, the relative rates being determined by the divergence of the slag from these limits.

Distribution of Manganese

It is well known that the behavior of manganese in the basic process differs entirely from that in the acid process. In the latter process the manganese is oxidized almost as quickly as the silicon; the amount left in the metal falls rapidly to about 0.05 per cent; the MnO passes into the slag, forming a stable silicate, and, except under abnormal conditions, plays no further part in the reactions.

In the basic process the rate of oxidation is far less rapid, the amount of manganese present in the bath varies within wide limits, and the reduction of MnO from the slag is a common phenomenon. The manganese content of the metal at tapping is dependent upon the character of the slag, and heats may be finished with 0.3 per cent of manganese in spite of the presence of a highly oxidizing slag.

The migrations of manganese between metal and slag have been the object of many investigations. Dr. Naske gives a full list of examples showing the reduction of MnO from the slag and the increase of Mn in the bath. He comes to the conclusion that the distribution of manganese between metal and slag depends upon the relative concentrations of MnO and FeO in the slag: if the ratio MnO: FeO exceed unity, reduction of MnO is brought about. Examination of the heats described above shows that no such simple explanation is satisfactory. In every heat given, the concentration of MnO in the melting slag exceeds that of FeO, but in only one case was reduction of MnO observed, unless spar and lime had been added and the basicity of the slag increased.

It is certain that the other constituents of the slag have a considerable influence on this reaction. As stated above, the condition of the MnO depends upon the basicity of the slag. If the bases be so low that MnO is necessary to form the monosilicate, no reduction is possible, as manganous silicate is not reducible under the prevailing furnace conditions. This is borne out by observations on an active mixer where the slag is always silicious. In this case it is perfectly easy to carry a slag containing 20 to 25 per cent of

MnO to about 5 per cent FeO, and for oxidation of manganese still to proceed. If the amount of base in the slag is sufficient to form the silicate and phosphate without MnO, the MnO will be present in the free state and be capable of reduction. If Naske's ratio be applied to free MnO and FeO, there is still a lack of agreement.

Reduction Depends on Oxidation

Dichmann suggests that the reduction of MnO depends upon the total concentration of oxidizing elements in the slag. He shows that in all Naske's examples there is a deficiency of FeO, and states, as his opinion, that reduction of MnO occurs whenever the FeO falls below 12 per cent, because the slag is then poor in available oxygen. This view is borne out, to some extent only, by the above heats. In them it was noted that the reduction of MnO took place only in the early stages of the working period, and under such conditions as gave a low oxide of iron content to the slag. In every case in section B where free MnO was present, reduction of MnO proceeded so long as the FeO was low, but no limiting value for FeO, such, for example, as 12 per cent, could be found, because this action ceased and manganese was at once oxidized and returned to the slag whenever oxide of iron was added.

It would appear that the distribution of manganese depends upon two factors, first, upon whether the MnO in the slag be in the free state or combined with silica; and, second, upon a balance between the following reactions:

(*a*) $Fe_2O_3+3Mn=3MnO+2Fe+80{,}193$ cals

(*b*) $2P+5MnO=P_2O_5+5Mn-93{,}961$ cals

$C+MnO=CO+Mn-62{,}755$ cals

The elements carbon, phosphorus, and manganese are all in need of oxygen for their elimination. By virtue of its greater heat giving value, phosphorus oxidation will be preferential, other conditions favorable, and the formation of MnO will follow. However, there will always be the tendency for the inverse reaction of the phosphorus and carbon on this MnO in the slag if it be free.

The net distribution of manganese between slag and metal will depend upon the difference in velocity of the reactions (*a*) and (*b*). The velocity of (*a*) will depend upon the concentration of oxide of iron in the slag, as indicated by Dichmann; while that of (*b*) will depend upon such variables as the concentrations of the various elements and oxides present, and also the temperature. So many factors being involved, it would seem impossible to lay down a simple rule stating definitely when this reduction of manganese oxide will occur.

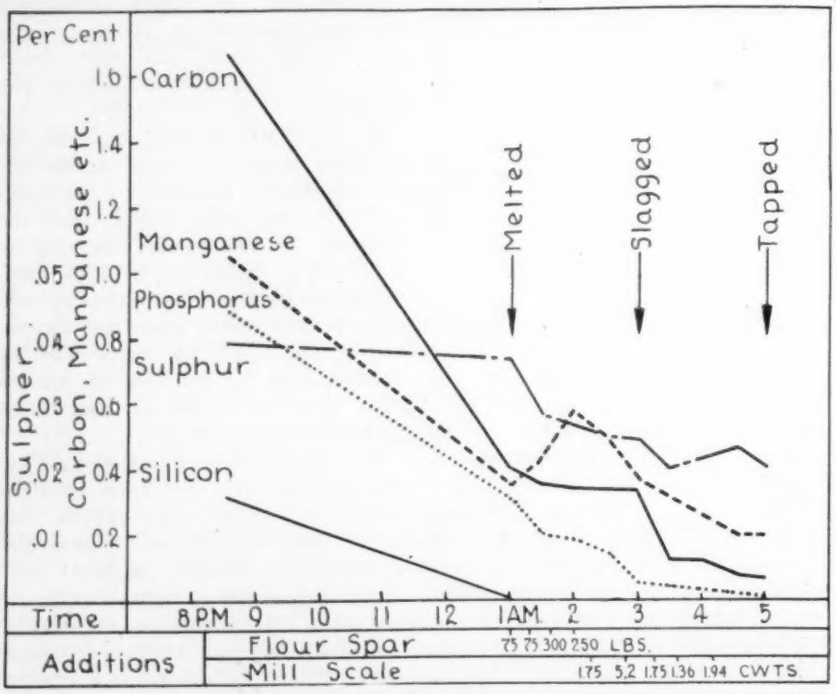


FIG. 3.—A CHANGE IN THE RATE OF REACTION OCCURRED AFTER LIMESTONE AND SCALE WERE ADDED

There are three processes by which the sulphur content of steel made by the basic process is reduced.

1. The Massenez process, where manganese is added to the liquid pig iron, which is allowed to stand in a mixer furnace. This manganese combines with the sulphur of the metal, and MnS, being soluble in both metal and slag, proceeds by the well-known partition law to migrate from the iron to the slag. This would continue until the relative concentrations in metal and slag reached a definite value, and then stop, but, owing to the secondary reaction, $2MnS+3O_2=2MnO+2SO_2$, the MnS in the slag is oxidized by the furnace gases, and the process continues until practically all the sulphur is eliminated from the metal.

2. The second method is an adaptation of this in the open-hearth furnace itself. Ferromanganese or manganese ores are added. In the latter case, MnO is reduced to manganese, which passes into the metal. In either case the manganese acts in the same way as in the mixer.

3. Saniter's process. It is now many years since Saniter demonstrated the value of adding fluorspar as a desulphurizing agent in the basic steel process, but, hitherto, no rational explanation has been given of the method by which it produces this effect.

Examination of the data collected in this investigation shows a remarkable parallel between the behavior of the manganese of the charge and the elimination of sulphur. In all cases where the lime content, and, therefore, the basicity of the slag, was low, there was a general oxidation of manganese, and no elimination of sulphur. In several cases the sulphur content increased. On the other hand, whenever spar and lime were added, and the basicity of the slag increased while the iron oxide content was low, there was a reduction of MnO in the slag, with an addition of manganese in the bath, and the removal of sulphur invariably followed.

It is generally agreed that the best way to use spar is to add it immediately after melting, and feed lime but omit oxide. These are precisely the conditions which lead to an increase of the manganese of the metal. Fluorspar and lime are not direct desulphurizing agents. The addition of spar, giving greater fluidity to the slag, enables it to carry additional lime; this lime displaces MnO from its combination with silica, and finally this free MnO in the absence of a large FeO content, is reducible to manganese. This manganese, added to the bath, is the active agent in the removal of sulphur. It acts in exactly the same way as manganese does in the mixer furnace, manganese sulphide passing into the slag and being converted into MnO and SO_2, which passes away in the chimney gases. If the conditions remain favorable, the MnO is again reduced, and the cycle of operations continues.

Acids Cause Instability

Conclusions reached in this series of tests are as follows:

1. The slag formed in a basic open-hearth furnace is essentially tetraphosphate of lime with monosilicate of lime, magnesia, and manganese oxide.

2. The addition of acid oxides to

(*Concluded on Page* 117)

Heating Affects Silicon Steels

Temporary Ductility of Sheets May Be Obtained to a Small Degree by Heating Them Slightly Before the Work Is Performed—Commercial Steels Become Brittle When Silicon Content Exceeds 4.2 Per Cent

BY NORMAN B. PILLING

PRACTICAL limitations to the usefulness of silicon steels are the hardness and brittleness which silicon imparts to iron, making iron-silicon alloys of more than 8 per cent silicon content unusable except where castings can be employed. In the use of commercial silicon steel in thin rolled sheets, as in transformer construction when the silicon content exceeds 4.2 per cent the sheet is too brittle for satisfactory shaping by punching or similar operations. When such a brittle steel is sheared it frequently breaks along a haphazard path in advance of the cutting tool.

In Fig. 1 is shown a slightly enlarged view of the sheared edge of a 14-mil enameled sheet of nominally 4 per cent silicon steel. In 5 inches along the sheared edge only 44 per cent actually was cut; the rest was torn with the path of fracture varying widely from the path of travel between the shears. This is probably an extreme case of such brittleness, but a shearing or punching test is not necessary to reveal brittleness of this order since narrow strips will break when bent between the fingers. In Fig. 1 the proportion of actual cut edge is greater, but secondary fractures branch off at about 30 degrees from the line of shearing in advance of the cut. Deprived of the support of adjacent parts of the sheet, the tips of the angles are bent out of the plane of the sheet by the shears, leaving a peculiar flared effect like the set of the teeth on a saw. An end-on view upper portion of the lower illustration, Fig. 2 shows this, the extreme lower is a similar end view of a sheet in which the quality of the sheared edge was rated as usable. The burr shows the condition of dies rather than the steel.

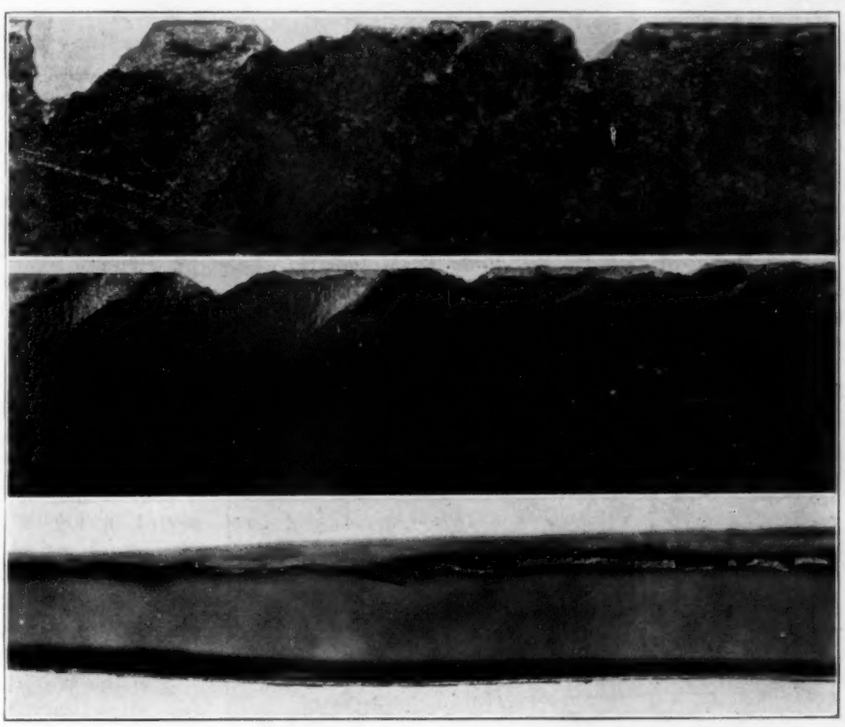


FIG. 1—(ABOVE) SHEARED EDGE OF A BRITTLE SILICON STEEL SHEET. (CENTER) EDGE OF A BRITTLE SILICON STEEL SHEET AFTER SHEARING. (BELOW) END VIEWS OF SHEARED EDGES OF SILICON STEEL SHEET, THE UPPER BEING BRITTLE AND THE LOWER USABLE. ALL VIEWS ARE MAGNIFIED 1.2 TIMES

Test Brittle Sheets

Several large sheets were taken from a large lot of steel that had been rejected as unusable after thorough trial by the metal stamping department. These sheets vary somewhat in composition and differ from the average of this grade of material by the high silicon and carbon contents; silicon will average 4.0 per cent, carbon 0.03. The composition of the brittle silicon steel sheets is shown in the following table:

Laboratory stock No.	Silicon, per cent	Manganese, per cent	Carbon, per cent
0217	4.69	0.22	0.075
0218	4.51	0.19	0.075
0219	4.71	0.22	0.87

All are so brittle that when an attempt was made to bend strips of them in the fingers a crisp fracture resulted. Sheet No. 1 was selected for an experimental investigation, the report of which follows; unless otherwise indicated reference is to this test sheet.

In getting to the root of the cause of this brittleness, information as to the actual path the fracture takes is of primary interest. A fractured edge is brightly crystalline, and in coarse grained sheets seems to be composed of plane facets which usually extend through the entire thickness of a 14-mil sheet. Portions of a sheet annealed at a high temperature in vacuum showed the crystalline pattern on the surface without acid etching. One of these "vacuum etched" sheets was bent with the fingers and promptly broke. The actual path of the fracture in relation to the crystalline structure could be followed easily with a hand magnifying glass. It is shown in Fig. 2 enlarged to 12 diameters. The crystalline structure is concealed somewhat by the surface roughness of the sheet together with the fact that the surface at the fracture is curved. An outline sketch is given of the path of fracture based both on this photomicrograph and visual examination under the microscope. The fracture is transcrystalline; that is, the grains do not tear apart but break in two. Although the fracture as a whole is irregular it follows only one direction within individual grains. These facts shed considerable light on the mechanism of failure. The actual fractured surface in one single grain is a cleavage plane of the metallic crystal, whence it is evident that it is the properties of the principal crystalline phase which are concerned. Commercial silicon steel contains silicon, manganese, sulphur, phosphorus, carbon and iron. Of these the sulphur and carbon are present as segregated particles.

From a paper presented before the New York meeting of the American Institute of Mining and Metallurgical Engineers, Feb. 19-21. The author is connected with the research department, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

sulphide and carbide respectively, while the silicon, manganese, and phosphorus dissolve in the iron forming a single crystalline substance which constitutes the principal metallic phase. The problem, then, concerns the behavior of this crystalline metallic solution subjected to plastic deformation.

The operations of punching and shearing involve deformation at a high rate of speed, compared with bending by hand. Although poor shearing properties tie up with poor bending properties, it was desirable to determine whether or not the mode of failure depends on the speed of fracture. Strips were clamped in a vise and bent around a small radius with a steel plate by hand at different rates of angular motion and one strip was struck with a 0.22 caliber bullet from a target revolver. The effect of the rate of bending is as follows:

Time to bend 90 degrees or break, seconds	Type of break	Angle of bend before fracture
185*		90 degrees+
1	Transcrystalline	39 degrees
0.0001	Transcrystalline	Small

*Did not break.

Two facts are evident from these trials at enormously different rates: 1. The type of fracture does not change when the rate of bending is greatly increased; it remains transcrystalline; 2. The ability of withstand bending depends on the rate of bending. The glasslike fragility of the sheet bent by a rapidly moving bullet and the successful right angle bend when three minutes were taken to complete it are extremes in ductility.

Effect of Temperature

There are two ways in which temperature may modify the properties of a metal: 1. Changes brought about by thermal treatment, such as annealing, and persisting as permanent changes at other temperatures; 2. strictly reversible changes, characteristic simply of the temperature at which the property is measured. The former concerns permanent, the latter temporary changes of the particular property concerned.

It does not seem that the brittleness of this 4.7 per cent silicon steel is especially susceptible to permanent improvement by heat treatment. In order to obtain the proper magnetic and electric characteristics, this grade of steel is given a long annealing at about 800 degrees Cent., followed by slow cooling. Modifying the rate of cooling to an extent sufficient to change the carbon present from carbide to temper carbon, or increasing the annealing temperature has no noticeable effect other than that quenching seems to increase the brittleness. The effect of heat treatment is shown as follows:

Annealing temperature degrees Cent.	Atmosphere	Cooling rate	Bent at 25 degrees Cent.
1200	Vacuum	Slow	Failed
800	Neutral	Very slow	Failed
800	Air	Fast	Failed
800	Air	Quench	Failed

Reannealing sheets from this same lot at seven temperatures between 625 and 815 degrees Cent., according to the regular temperature cycle, had practically no effect.

Heating Eliminates Brittleness

The ductility at high temperatures must be far different from its cold ductility in order to permit the fabrication of the metal to thin sheets. When bent at 750 degrees Cent. in a Meker burner a strip could be bent easily and the bend flattened with a hammer without the slightest indication of failures. Therefore, somewhere between 25 degrees and 750 degrees this steel is no longer brittle, but becomes workably ductile. A rough estimate of this temperature was made by bending strips, hot, somewhat more than a right angle into such shape that the bend could be quickly crushed flat, cooling, bringing to the temperature range desired and then flattening. The surprising result is the lowness of the temperature to which the steel remains ductile; cooled to the temperature of boiling liquid air, 190 degrees Cent., it is glasslike in fragility.

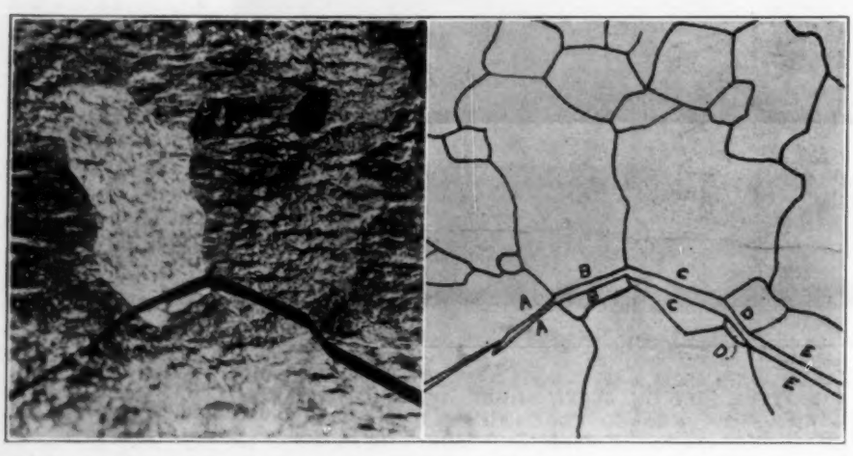


FIG. 2—THE PATH OF FRACTURE IN 4.7 PER CENT SILICON STEEL, MAGNIFIED 12 TIMES

The following table shows the effect of temperature on the steel:

Temperature, degrees Cent.	Bending ability
750	Soft and ductile
400-500	Ductile
200-300	Ductile.
100	Stiff, but deformed without breaking
20	Fractured after 50 per cent bend.
—190	Brittle; broke without bending.

The ability of silicon steel to deform plastically and exhibit ductility is affected profoundly by the temperature at which it is deformed. For this particular steel a slight rise in temperature yields sufficient temporary ductility to permit drastic deformation without failure.

Effect of Silicon

It has been noted that brittleness is associated with an unusually high silicon content. It is, therefore, probable that a definite connection exists between composition and the temperature-ductility relation. A series of commercial silicon steels of graded silicon content was obtained in 14-mil sheets and the temperature of incipient ductility estimated from bending tests made at different temperatures. The composition of the steel sheets was as follows:

		——Composition——		
Laboratory stock No.	Grade	Silicon, per cent	Manganese per cent	Phosphorus, per cent
020	Pure, vacuum fused electrolytic iron	0.011	0.01	Less than 0.005
0221	MA silicon iron	0.86	0.24	....
0222	3 AW silicon steel	2.02	0.23	....
0223	1 AW silicon steel	3.84	0.15	0.043
0217	1 AW silicon steel	4.69	0.22	0.030

A scale of temperatures was fixed by the melting and boiling points of a number of substances, small bits of which were placed in the angle of the previously bent strips. When the desired temperature was indicated, the strip was quickly placed on a wooden block and the bend flattened with one blow of a hammer. Partial or complete cracking was considered failure by this test. The scale of temperature is as follows:

Degrees cent.		
—190	Liquid air	Boiling point
—130	Ethyl alcohol	Melting point
— 95	Acetone	Melting point
— 40	Mercury	Melting point
+ 25	Room temperature	
+ 65	Wood's metal	Freezing point
+100	Water	Boiling point
+150	Bismuth-cadmium eutectic	Freezing point

The results of this experiment are plotted in Fig. 5; examples are shown in Figs. 3 and 4. Even iron of the highest purity develops this brittleness when the temperature of deformation is sufficiently low, 130 degrees Cent., and it appears that the brittleness of silicon steel is this property of iron made manifest at ordinary room temperatures by the effect silicon has of raising the temperature of incipient brittleness. The effect of the first 2 per cent of silicon is slight; thereafter the raising of the critical temperature proceeds rapidly and reaches the ordinary indoor atmospheric

temperature range, 10-30 degrees Cent. at 3.9 per cent silicon. At higher silicon contents, the temperature must be raised an amount proportioned to the silicon content to reach the range of workable ductility.

The degree of ductility necessary for successfully withstanding the rapid deformation of the flattened bend test is rather high and a steel of given composition that fails at a certain temperature may successfully pass a less severe test. The dotted curve gives an approximation of the temperature-composition limits for the appearance of brittleness at the other extreme; namely, bending slowly around a comparatively large radius, as in a rough finger bend. Thus, in the neighborhood of 4.0 per cent silicon, a temperature range of nearly 50 degrees Cent. and a silicon range of about 0.4 per cent form a zone in which brittleness may or may not be apparent, depending on the conditions of stressing.

For a given manner of testing, the actual temperature difference separating a workable from an unworkable degree of ductility is apparently quite small. The steel sheet shown in the lower part of No. 2 was decidedly unsatisfactory, as shown by both bending and shearing experience. A strip from it was held in a running stream of water, the temperature of which could be regulated with considerable nicety, and bent with the fingers around a ⅛-inch radius. The small temperature difference separating the workable from the unworkable is illustrated in the following table:

Temperature, degrees cent.	Attempt to bend
37	Failed
43	Bent without cracking
37	Failed

A 6 degree difference in temperature was enough for definite differentiation between success and failure. The composition of this sheet by analysis was silicon 4.57 per cent, manganese 0.20 per cent. This has its corollary in the conduction of ductility tests, such as the Erichsen, of silicon steel, especially around the critical content 4.0 per cent or above, in which the actual temperature of testing should receive a consideration not given with customary usage. The pure iron sheet, manganese 0.01 per cent, was distinctly more brittle at—130 degrees Cent. than the 0.86 per cent silicon steel with 0.24 per cent manganese; this together with the tendency of the 3.84 per cent silicon alloy containing but 0.15 per cent manganese, toward a higher critical ductility temperature than the vurve value would indicate, points to manganese as having an effect opposite to that of silicon, that is, lowering the critical ductility temperature, or producing a greater workability at a given temperature, other conditions being equal. This is in agreement with the well known effect of manganese on iron at much higher temperatures.

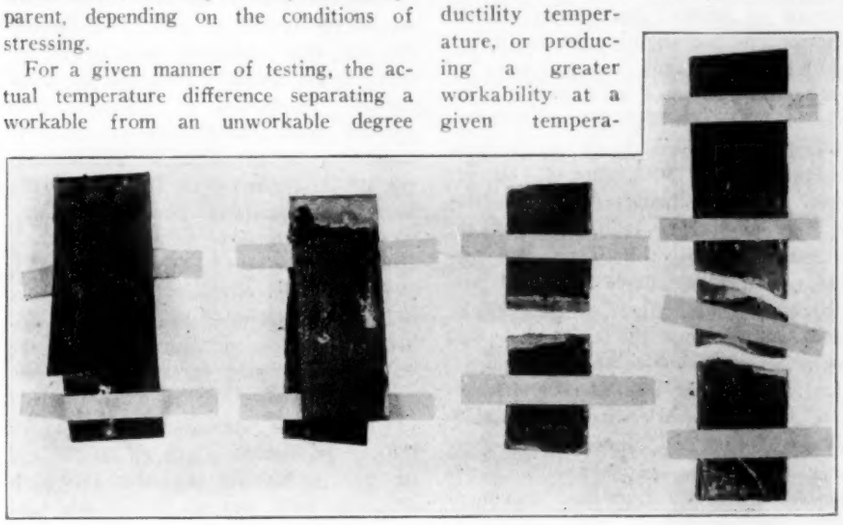


FIG. 3—DUCTILITY OF 4.7 PER CENT SILICON STEEL AT DIFFERENT TEMPERATURES

A sufficient range of phosphorus content was not available to decide its effect. An iron phosphorus alloy containing 0.14 per cent phosphorus was ductile enough at room temperature to be peened with a hammer. Although aluminum is not present in silicon steels in any quantity, metallurgically it is similar to silicon in that it forms solid solutions with iron upto high concentrations, 32 per cent aluminum. At 5 per cent aluminum, the ductility begins to decrease markedly and the alloys become brittle. A 7 per cent iron aluminum alloy broke into fragments when hammered at room temperature; at 100 degrees Cent., it fractured; at 150 degrees Cent., it deformed successfully. It appears, then, that aluminum has an effect on the critical ductility temperature of iron similar to that of silicon.

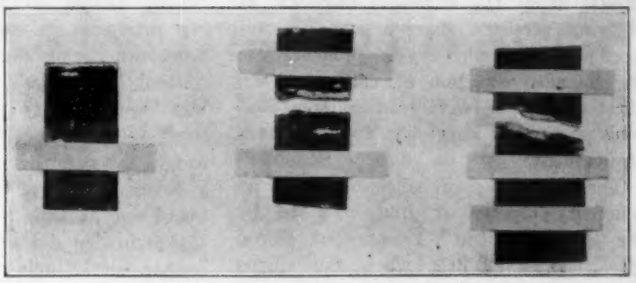


FIG. 4—DUCTILITY OF 2 PER CENT SILICON STEEL AT DIFFERENT TEMPERATURES

Knowing that carbon, when present as precipitated carbide in steels of this type tends to segregate as an intercrystalline layer, it would seem unlikely for it to have a direct effect on brittleness as the path of fracture does not follow but crosses the seat of carbon segregation. Replacing carbide by temper carbon appears to have no effect. Positive information as to the influence of carbon has not been obtained.

The fracture in silicon steel follows cleavage planes of the crystal. Anything that serves to break the continuity of the path of rupture will aid in checking it. Hence, the frequent change in direction that the fracture is compelled to make in passing from one grain to another is an effective agent in limiting an incipient fracture. An example of this was noted when an attempt was made to cut, with a rather dull pair of tin snips, a strip of 4.0 per cent silicon steel in which the grain size was nonuniform. The fine-grained end cut well, but it was impossible to cut across one large

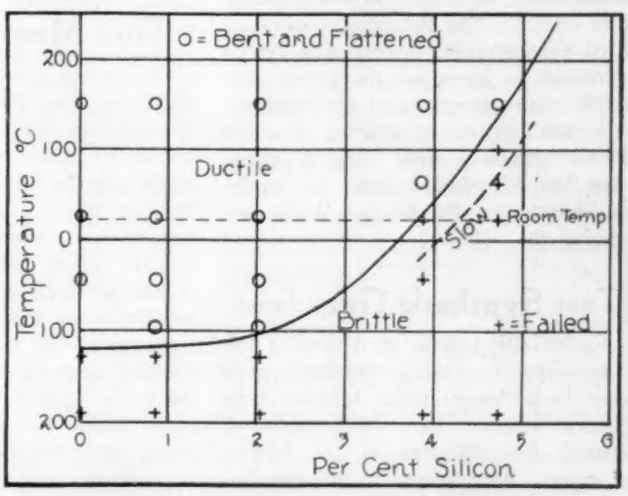


FIG. 5—EFFECT OF SILICON ON TEMPERATURE OF INCIPIENT DUCTILITY OF SILICON STEEL

crystal about 1½ inches in diameter, as shearing persisted along a set of cleavage planes of the crystal obliquely to the intended direction of cutting. When sheet and shears were held under a running stream of warm water the cut was easily made.

The brittleness of silicon steel is an inherent property of iron, modified by the alloyed silicon. Commercial silicon steel becomes brittle when the silicon content exceeds 4.2 per cent. Temporary ductility may be obtained by carrying on cutting or deformational operations at temperatures slightly above atmospheric, the temperature depending on the steel composition. Brittleness is modified only slightly by heat treatment. The purest iron shows a similar brittleness at about —30 degrees Cent. The effect of several alloying elements is: Silicon raises critical ductility temperature; aluminum raises critical ductility temperature; and manganese lowers critical ductility temperature.

Protest Removal of Head of Reclamation Service

The Federated American Engineering societies have made a formal protest against the removal of Arthur P. Davis as director of the United States reclamation service by Secretary of Interior Work. This organization, which has a membershop of 28 engineering societies, maintains that the discharging of a successful employe after 35 years of service without a hearing or adequate explanation will undermine the morale of the technical agencies of the government and may lead to the accepting of commercial positions by the most competent engineers now in the service. Because of the far reaching results that might ensue and because of the belief that the situation is serious, the organized engineers and technical men of the United States are preparing to make a thorough search into the considerations that led to the action taken in regard to the reclamation service. The American Society of Civil Engineers has appointed a special committee to investigate the matter. The public affairs committee of the Federated American Engineering societies, of which Parke Channing, New York is chairman, has addressed a letter of inquiry to Secretary of the Interior Work concerning the action.

Test Synthetic Gray Iron

Carburization tests to determine the feasibility of making synthetic gray iron in an indirect-arc, rocking type electric furnace have been made at Detroit by engineers of the bureau of mines, department of the interior. The results were gratifying, an excellent quality of gray cast iron being produced in every test. The carbon content of the metal was under control. With this type of furnace it was found best to mix some gray iron scrap with the steel scrap in order to get the melting started at a lower initial temperature, and thus avoid overheating the roof. Test bars 1⅛ inches in diameter were made and broken on 12-inch centers. Deflections as high as 3.65 degrees and breaking strengths of 3000 pounds were obtained. On the evidence of these tests an inspector for one of the large automobile plants in Detroit placed a large order for castings specifying electric furnace iron and agreeing to pay a premium the bureau states.

Studies Neumann Bands

F. B. Foley, metallurgist of the bureau of mines, department of the interior, is investigating the occurrence of Neumann bands in specimens of mild steel subjected to impact by explosion. The disks of steel were placed on a lead block at varying distances from 50 grams of 60 per cent straight nitroglycerin dynamite, at the explosives laboratory of the bureau of mines, Pittsburgh, and suspended vertically above the block and specimen. The effect of the explosion was to cup the steel disk and make a depression in the lead blocks; this effect grew less as the distance was increased. Microscopic examination at Rolla, Mo., showed that there was a decrease in Neumann bands as the distance between specimens and the explosive was increased. Microphotographs have been taken. The specimens are now being prepared for running solubility tests in weak acids, in an attempt to discover whether or not the occurrence of Neumann bands affects the solubility of the metal.

Flux Must Be Graded

Giving the characteristics of fluxing limestone, Dr. Oliver Bowles, mineral technologist for the United States bureau of mines, states that the limestone usually is prepared in sizes ranging from 2 to 7 inches. Open-hearth steel furnaces, he states, usually demand stone not less than 4 or 5 inches in size, but for blast furnaces smaller stone may be used. Smelting companies that operate their own fluxing quarries may use stone as small as ¾-inch mixed in with the larger sizes, but where purchases are made from independent producers it is unlikely that sizes smaller than 2 inches would be acceptable. Thus 2 to 4-inch stone might be sold to blast furnaces in limited quantities, though a large amount of the small-sized stone would be undesirable when not mixed with the larger sizes. This use is limited not only by the demand but by transportation, for it is too low priced to justify a heavy haulage charge. Most limestone used for lime manufacture is well adapted chemically for fluxing uses, and a number of lime companies sell fluxing stone.

Labor Unrest Cuts Output of Swedish Iron

Labor unrest and lessening of demand from abroad have greatly reduced the ouput of Swedish iron, the production of pig iron in Sweden for the first three months of 1923 being 37,300 tons, as compared with 57,400 tons for the corresponding period of 1922, and 186,100 tons for 1914, according to a recent report of the Swedish Iron Works association. Production of malleable iron fell off from 55,100 tons in the first three months of 1922 to 20,700 tons for the first quarter of 1923, while finished rolled products dropped from 39,900 tons in the first quarter of 1922 to 20,800 tons in the same period of 1923.

The general lock-out situation has caused a considerable drop in the number of furnaces in operation. Of the 463 iron and steel furnaces in Sweden, only 52 were in operation at the end of March, as compared with 40 for the end of February and 117 at the end of 1922. Eighteen of the 132 blast furnaces were active, 29 of the 204 Lancashire furnace were in operation, no bessemers were in use, two of the 82 Martin furnaces were in operation as were three of the 27 electric steel furnaces.

Exports of iron and steel during the quarter amounted to 48,600 tons, as compared with 37,400 tons for the first quarter of 1922. In the same period of 1923, iron ore shipments totaled 1,202,000 tons, or more than double the shipments of 660,000 tons in the first quarter of 1922.

Adds Refractory Film

"The Story of Refractories," presenting typical scenes of the manufacture of refractory brick and other refractory products, is the latest industrial film acquired by the United States bureau of mines. The bureau now has 80 different industrial films, valued at $200,000, depicting processes in the manufacture of products wholly or partially of mineral origin. These films may be borrowed from the bureau's Pittsburgh station.

Handling Materials in Furnaces

Efficiency of the Best Design of Electric Furnace Can Be Ruined by Poor Handling Methods—Furnace Operation Based on Accurate Mathematical Data while Material Handling Lacks System

BY FRANK W. BROOKE

OUTSTANDING engineering features that have made the modern electric furnace for temperatures up to 1800 degrees Fahr. so successful are the drawn nickle-chromium resistance elements and the high standard of thermal insulation. Those who have read the many papers presented at various times will realize the careful study and pioneer work that has been given to these subjects, and the accurate data that have been compiled concerning electric heat treating furnaces.

One problem, however, that will not be standardized for many years is the method of handling the material to be treated both while it is in the furnace and out of the furnace. The efficiency of the best design of furnace can be entirely ruined by poor handling methods. On the other hand, given a particular method of handling the material, it becomes a problem for an experienced furnace engineer to design the furnace to suit this method.

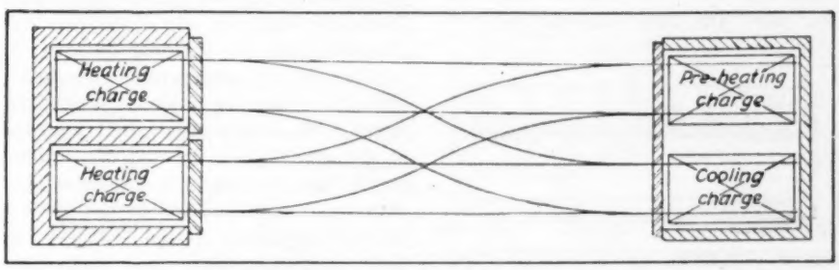


FIG. 1—RECUPERATIVE FURNACE SHOWING HOW DUMMY FURNACE IS PROVIDED

Take, for instance, the handling of light materials in many of the existing fuel-fired furnaces. Strength and resistance to scaling has necessitated a high rato of the weight of the handling medium in the furnace to the work being treated. It is quite common to meet cases where this ratio is 2 to 1, or more, which means that twice as much fuel is expanded in heating the holding or carrying device as in heating the work.

The electric furnace designer has met these cases in a proper engineering manner. The whole of his furnace engineering is taken from accurate mathematical data. The heat input is exact and constant. He studies specific heats not only at room temperatures but also along the range of his working temperatures. He calculates the heat losses. Besides, he is not confronted with the eating away of his holding devices by oxidation to the same extent. It is the object of this paper to point out some of the advantages and disadvantages of various furnace designs and methods employed in the handling of materials for electric furnaces at the higher temperatures.

The plain box type of furnace having one door is simple and the many methods of handling material for it are too well known to require description. It allows for high grade thermal insulation, and care need be taken only to provide against the door losses. This is done by making a well sealed door, and by doubling up resistance elements at the door ends. In electric furnaces the volume of the furnace chamber is not restricted to the same degree as in the fuel-fired furnace, and therefore lends itself to the use of special design. The special box type furnace is designed for the accurate heat treatment of steel products having varied lengths, where the output does not warrant the use of a different length of furnace for each different length of product.

It is fitted with three partition doors each having a special seal, and the heating units are so placed that there is a uniform heat distribution under all conditions of operation. The end doors face into two different shops and give an extremely flexible arrangement for the class of work for which it was designed, at a first cost and an operating cost both much lower than if separate furnaces were used.

Another interesting variation of the box type furnace is one in which a preheating chamber is put back to back with the high temperature chamber, having in this case only one partition wall. This is used for vitreous enameling work, or for heat treating fine tools. In the latter case the low temperature chamber can also be used for drawing.

For vitreous enameling a special form of hearth is used either for facilitating the handling of the work, as in thin sheet work, or for allowing a large amount of the heat to be applied at the bottom of the work to be treated. It is essential as in bath tub work, for the enameling to be done "through the work" as well as from the upper surface.

The furnace car type gives a much better handling arrangement, especially for large pieces handled by the crane. In considering its use, it should be borne in mind that when the car is withdrawn from the furnace the entire hearth bottom is exposed to rapid heat loss. To give high thermal efficiency and uniformity of temperature, an electric furnace car bottom is much more massive than that used in the ordinary fuel-fired furnace, and when exposed to direct radiation loss it loses a greater quantity of heat.

For this reason, the time cycle of electric car type furnaces should be arranged to ensure the car being rapidly unloaded and reloaded, or else a dummy furnace should be provided, as shown in Fig. 1, whereby there is an exchange of heat not only

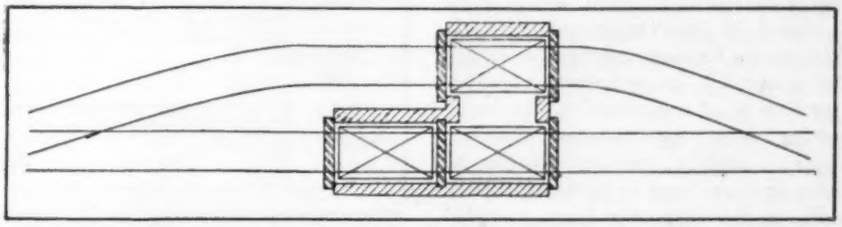


FIG. 2—TYPE OF RECUPERATIVE FURNACE ECONOMICAL IN FUEL CONSUMPTION

From a paper presented at the New York meeting of the American Electrochemical society, May 3-5. The author is chief engineer, Wm. Swindell & Bros., Pittsburgh.

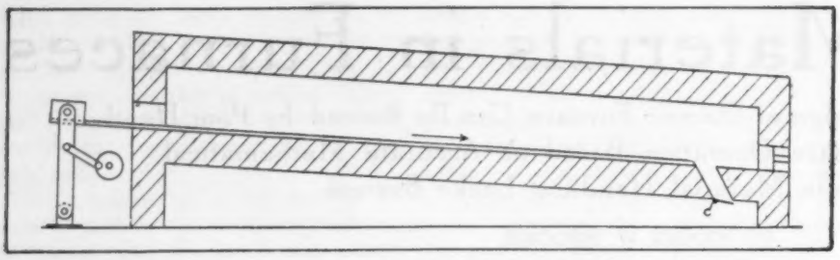


FIG. 3—PUSH TYPE FURNACE ONE OF THE MOST EFFICIENT OF CONTINUOUS FURNACES

between the cooling of a hot charge to a cold charge but also from car to car. For heat treatments requiring a long time of heating, holding and cooling in the furnace, it is advantageous to build the door directly on the car.

Recuperative Furnaces Economical

The furnace shown in Fig. 3 is perhaps the simplest form of recuperative furnace. Providing the time between heats is not too long and the output warrants two furnaces, its use invariably pays. Where the heats are of long duration, the steady radiation loss of the dummy furnace defeats its economy.

A better form recuperative furnace is shown in Fig. 2. This arrangement allows for recuperation from one heating chamber, but on the other hand requires three chambers per unit. It requires also considerable rail switching, but has given excellent fuel economy. Still another form of recuperation is shown in the counterflow type of furnace, the various designs of which are too numerous to illustrate. A car type of counterflow furnace, now used in the annealing of gray iron castings is divided into seven sections, each corresponding to a car length. Only the middle section is equipped with heating units and has a short dividing wall. The heating units are suspended on the four walls so that each preheated car is heated from both sides. On either side of the heating section are two cooling and two preheating sections.

The trains of parallel cars move in opposite directions, and each moves one car length at equal intervals of time. Therefore, a heated car and its charge leaving a heating section is placed directly besides a car and its charge partially preheated, and is given a period of interchange of heat. It then moves forward another car length and some of its remaining heat is given up to a cold car and its charge coming from the transfer chamber. There is also a transfer chamber at either end, enclosed in lightly insulated walls, as the cars after being reloaded still retain a considerable amount of heat well worth conserving.

It is interesting to note that the first electric furnace installed on this design had a partition wall running the entire length of the furnace, in which port holes had been left at the top and bottom. The design of this furnace was taken from a previous fuel type design, but the engineers built the partition wall in such a way that the portions in the recuperative chambers could be removed readily if necessary. They soon found this to be necessary. It was found also that instead of the longitudinal partition being necessary, transverse partitions between each section were absolutely essential for tem-

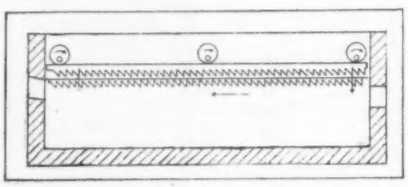


FIG. 4—WALKING BEAM DESIGNED TO TREAT SHELLS, CRANKSHAFTS, AXLES, ETC.

perature uniformity and efficient heat exchange. The work which is small and of thin gray iron castings is placed on superimposed trays, and one end of each tray forms part of the transverse partition.

The prospective electric furnace user thinks first of all of a continuous furnace with regard to the work, feeling that a continuous furnace is a labor-saving furnace, a fuel saver, routes work better and is more modern. There are, however, many, points of electric furnace engineering to be considered before a complete knowledge of these points can be given, and it is surprising how often it can be shown, excepting in such cases as producers of a large quantity of uniform products as in the motor car industry, that a continuous furnace is not the best all around furnace to install, often proving a disappointment to the prospective customer.

A continuous furnace used for heat treating light flat disks works satisfactorily. The limiting feature of such a design is the temperature of the conveyor. If carried above 1200 degrees Fahr. the stretch becomes a serious consideration.

A surprising feature in such a design is the loss of heat caused by the exposed ends of the chain. It is easy to see that the loss would be material, but actual experiments in one particular design show a thermal efficiency of about 18 per cent. This can be improved by the proper boxing-in of the ends, but where chain area must be available for loading and unloading this enclosing is limited.

A better arrangement for carrying light work through the furnace is shown in Fig. 5. This consists of three chain systems, only the middle one of which is always inside the highly insulated walls of the furnace. The charging and discharging systems do not attain a temperature sufficiently high to cause a serious heat loss. When a chain system is totally enclosed in the way shown, it must be remembered that this chain attains the temperaure of heat balance of the furnace which is decidedly higher than the one chain system where the chain goes out of the furnace. It is also more difficult to take care of heat losses through the journals when higher shaft temperatures and stretch adjusement must be taken care of.

Designing Electric Furnace

At the present the author is engaged in the designing of three different types of electric furnaces, in each of which the mechanical handling of the material is of vital importance, as the material must not be marked and furnace efficiency and tempearture uniformity is of utmost importance.

For the continuous conveying of work through an electric furnace at the higher temperatures, the so-called "doughnut" furnace offers an excellent method of carrying out the operation and has many advantages. The conveying hearth is made of refractory

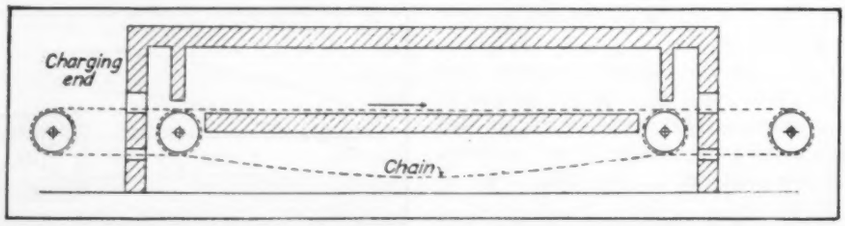


FIG. 5—ARRANGEMENT FOR CARRYING LIGHT WORK THROUGH CONTINUOUS FURNACES

materials, and can therefore handle materials at the limiting temperatures of electric furnace heat treatment. The charging and discharging doors are adjacent, and in many operations one man can attend to both. The thermal efficiency is high as only the hearth seals under the furnace offer any insulating difficulty. It is used to special advantage in the heat treatment of gears and small machine parts. When the work to be treated is of a uniform character automatic loading chutes can be adapted, and the work can be "swept-out" at the discharge end.

Push Furnace for Uniform Work

The push type of furnace is perhaps one of the most efficient types of continuous furnace used, and is shown in Fig. 3. It is restricted to work of a uniform shape, and work which will push in a long column without bridging. This tendency to bridge can be lessened by inclining the furnace and thus lessing the friction to push. It is an excellent method of conveying such parts as small connecting rods, push rods, small cylindrical pieces etc., and fits in with production heat treatment for small parts. The speed of travel can be varied through a wide range and the discharge end can be sealed in the quenching tank. The push furnace is simple in construction, has a low operating cost, and has a lower first cost than the many other types of furnace. The gravity roll type of furnace has the same degree of efficiency and usefulness as the push type, but is still further restricted to products that will roll by gravity. The feed through the furnace can be regulated by a discharge timing gear.

The walking beam type of furnace forms one of the fascinating means of handling materials through an electric furnace. It is restricted to uniform shapes and sizes, such as automobile crankshaft, connecting rods, bars of steel, etc. In the more simple type of walking beam, the beams are lined with refractory material, but the continuous top surfaces of the beams must be kept in a true horizontal plane so that the points of contact with the work are made with each beam simultaneously; otherwise the work will creep more along one side of the furnace than the other. A good beam mechanism which ensures work temperature uniformity and furnace efficiency adds considerably to the first cost of the furnace.

An interesting variation of the walking beam furnace is the type shown in Fig. 4, designed to treat shells, crankshafts, short shafts, axles, etc., in such a way that the axes of the work are always parallel and there can be no jamming while materials are being passed through the furnace.

For the heat treatment of steel balls and similar materials, a design such as is shown in Fig. 6, offers an excellent method. The author does not know of any furnace of this type in which electricity is used as a fuel, but there is no reason why electric resistance units cannot be applied to give all the inherent values of the electric furnace. The figures shown and types referred to are general. It would be difficult to give references that would be complete and at the same time fair.

Test Fuels for Reduction of Sponge Iron

Experimental work was performed by the department of the interior at the northwest experiment station of the bureau of mines, Seattle, looking toward the possible use of other reducing agents than coal for the reduction of sponge iron. Results show that retort carbon and coke breeze were satisfactory as reducing agents but that from 1 to 1¼ parts by weight of these materials must be used per part of ore. In other words, although these reagents contain more carbon than coal, as much of them by weight must be used.

Charcoal was found to be as satisfactory as coal from the reducing standpoint, but, on account of its low apparent specific gravity, too much of it is blown from the furnace to warrant its use as a reducing agent. The experiments proved that sawdust contained altogether too little fixed carbon and was too light in weight to be used, so much of it being required to effect satisfactory reduction of the iron oxide that the capacity of the furnace is reduced too much to permit of its commercial operation. Hogged fuel has not been tried as yet, but it is expected that better results will be obtained with it than with either sawdust or charcoal.

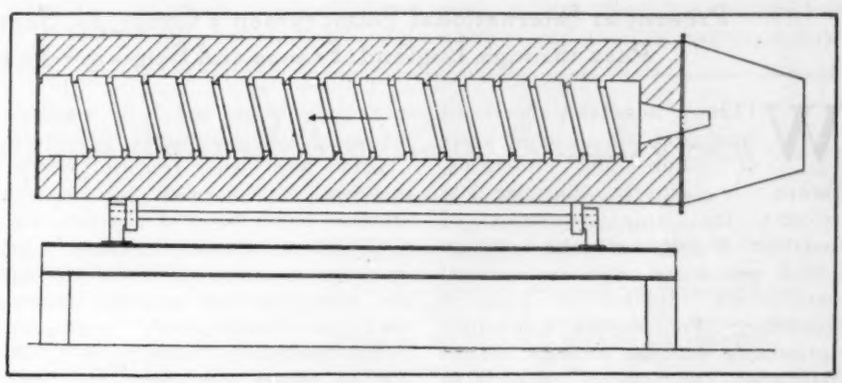
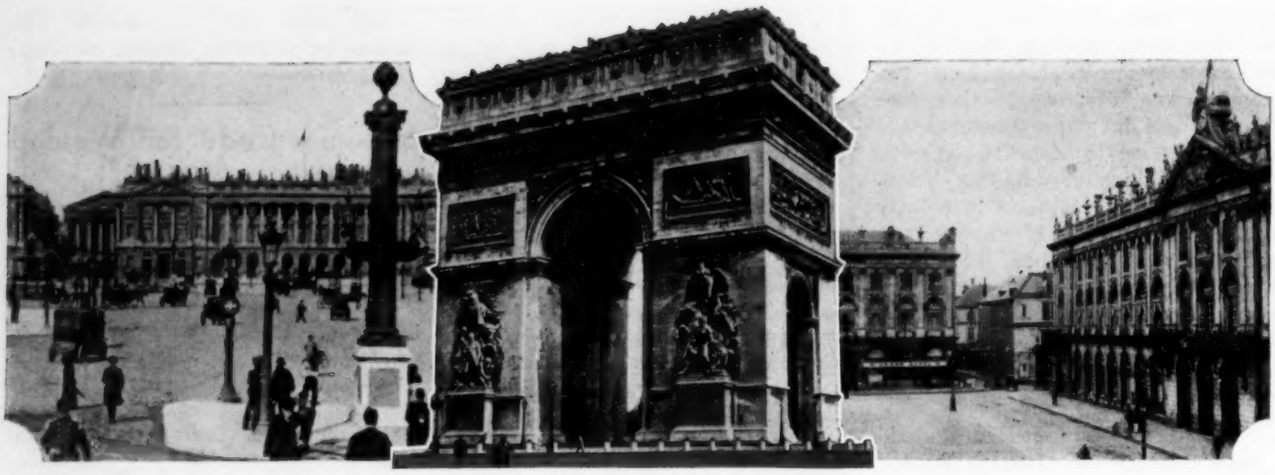


FIG. 6—CONTINUOUS FURNACE FOR TREATMENT OF STEEL BALLS AND SIMILAR MATERIALS

Submits Code for Welded Pressure Vessels

Recommendations for the construction of unfired pressure vessels are made in an extensive report prepared by the American Bureau of Welding and published in the May issue of the *Journal* of the American Welding society. This investigation was part of a program assigned to the boiler code committee of the American Society of Mechanical Engineers but difficulty was experienced in preparing rules for the use of fusion welding, as the failures of a few welded pressure vessels had led to the impression that welded seams were inherently weak. The increased application of the method in the construction of tanks made it advisable to secure accurate information as to the strength of welded tanks.

In 1920 the council of the American Society of Mechanical Engineers requested the American Welding society and the American Society of Refrigerating Engineers to appoint committees to co-operate with the boiler code committee in the preparation of that part of the code dealing with fusion welding. A tentative code was drawn up and submitted to a general hearing on Dec. 5, 1921. Not enough experimental evidence was presented to clear up some of the important questions, thus in April, 1922, the American Bureau of Welding called a conference of manufacturers of welded pressure vessels to deal with the situation. Following this meeting a number of test tanks were made up and submitted to the bureau of standards for testing. At the conclusion of the tests during the early part of 1923, the committee reviewed the results and revised its code. The recommendations as published are quite long, the report comprising 151 pages. A number of tables and 120 illustrations are presented.



PLACE DE LA CONCORDE, PARIS—CENTER—THE ARCH OF TRIUMPHS, THE PARISIAN MONUMENT TO VICTORY—GRAND HOTEL AND MUNICIPAL PALACE AT NANCY

Europe to Entertain Foundrymen

Members of the American Foundrymen's Association Will Journey to Paris To Be Present at International Foundrymen's Congress, Sept. 2-6—Delegation Will Pass through England, France and Belgium—Features Are Planned

WITH a hospitality developed from over two thousand years of culture and civilization, Europe is actively planning to welcome the large delegation of American foundrymen who will go abroad to attend the international foundrymen's congress in Paris in September. For months committees representing various sections of the Association Technique de Fonderie de France, the Institution of British Foundrymen, the British Iron and Steel institute, the Association Technique de Fonderie de Liege, Belgium, and other European technical and engineering societies, have been busy planning the reception of the American delegation. When the first organized party of American foundrymen to go to Europe sails from New York on the giant American steamship LEVIATHAN on Aug. 18, it should be with the knowledge that elaborate preparations have been made across the seas to insure the success of the trip from the standpoint of both business and pleasure.

The focus of attraction naturally will be the international foundrymen's congress and exhibition which will be held in Paris, Sept. 2-16, but before going to France the party will visit the leading foundry centers in England, and after the convention a specially arranged tour of the industrial and war zones of France and Belgium has been arranged.

The trip abroad will be made under the auspices of the American Foundrymen's association and it is expected the party will be headed by G. H. Clamer who was recently elected president, accompanied by various members of the board of directors, and C. E. Hoyt, secretary-treasurer. An invitation to attend the Paris meeting and exhibition was extended to the American Foundrymen's association by the Association Technique de Fonderie de France last year. This invitation was formally accepted by the directors of the American Foundrymen's association in October 1922 and the work of organizing a delegation was handed over to the association's committee on international relations.

To Visit England

The invitation of the French association was supported in person by Emile Ramas, who made the journey from Paris to the United States in April and attended the Cleveland convention of the American Foundrymen's association for this purpose. Monsieur Ramas' invitation was received with unusual enthusiasm at the Cleveland meeting.

The French association extended a similar invitation to the British and Belgian foundrymen's organizations, both of which are co-operating in the Paris meeting. Upon learning that the American delegation would be coming to Paris, the council of the Institution of British Foundrymen sent a special letter of welcome to the American Foundrymen's association requesting that the party travel via England and visit prominent foundry centers in the United Kingdom. Accordingly arrangements have been made for the party to visit Southampton, London, Sheffield, Manchester, Birmingham, Coventry, and Stratford-on-Avon in England; Paris, Creusot, Nancy, Metz, the American battlefields, and Lille in France; and Liege, Seraing, and Brussels in Belgium. The travelling arrangements have been placed in the hands of Thomas Cook & Son, the details being handled through their office in Philadelphia. Special couriers and interpreters will travel with the party and special arrangements all along the line are being made for hotel accommodations, transportation, handling of baggage, and other details for the comfort, care and convenience of the travelers.

Although an elaborate entertainment is being provided by the European foundrymen, the educational, technical, and business features of the trip are also important. In every center to be visited arrangements are being made for the visiting delegation to have access to the most modern and up-to-date foundries, machine shops, and engineering establishments. There will also be discussions on foundry problems of both a formal and informal character. Among the interesting technical processes which the visitors will have an opportunity to study will be the manufacture of manganese steel castings; the production of centrifugal castings in permanent molds;

new methods of melting gray iron, including the use of the open-hearth furnace for this purpose; the manufacture of airplane motors, automobile parts, ship fittings, etc.

At the Paris conference itself a large number of papers dealing with foundry problems will be discussed and one entire session will be given over to the special problems of American and British foundrymen. This session will be in the English language. The question of an international test bar and of uniform international specifications for cast iron will be discussed. British and continental foundrymen are particularly well versed in the metallurgy of cast iron and the preparation of sand. Both of these problems will be thoroughly dealt with at the Paris conference.

The exhibition of foundry and shop equipment which will be held in conjunction with the Paris convention, will be exceedingly instructive to American foundrymen. The best types of American and European foundry equipment will be displayed side by side and much of the equipment will be in operation.

The LEVIATHAN is one of the most completely equipped and fastest ocean liners afloat. She is due to arrive in Southampton on Friday, Aug. 24, where the party will be met by the representatives of the Institution of British Foundrymen and by members of the American Foundrymen's association who reside abroad. The trip to London will be made on a special boat train, the journey taking about an hour and a half. The headquarters for the party in London will be at the Cecil hotel. For the first two days in London, one of which is Sunday, no special arrangements have been provided, except for an automobile trip to Windsor Castle on the first day.

To Visit Propeller Factory

On Monday, Aug. 27, commences a four weeks' round of official receptions, plant inspections, and sightseeing. The first event on the program is a visit to the largest bronze and propeller foundry in Europe, said to be the largest in the world of its kind. A dinner of welcome followed by a dance, to which all members of the American delegation will be invited, will be given, probably at the hotel Cecil, on Monday evening, Aug. 28. The British Iron and Steel institute and the London branch of the Institution of British Foundrymen will be the hosts on this occasion.

On Tuesday, Aug. 28, the party leaves for a ten days' tour of the English provinces. The first stop will be at Sheffield, which will be reached at 6:26 p. m. Tuesday evening. Sheffield has a population of 500,000 and lies 160 miles north of London. The name of the city is synonymous with the words "iron and steel." It is not only the center of the great midlands industrial district, but also one of the great steel cities of the world. Sheffield contains what is said to be the largest steel foundry in existence. Manganese steel castings were first produced in Sheffield and the city includes a large

Program for European Tour of American Foundrymen

(In a few cases the arrangements are tentative and in others some slight changes may be made at a later date.)

August

18 Leave New York via SS. LEVIATHAN.
24 Arrive Southampton, proceeding immediately to London via special boat train.
25 Trip by motor car to Windsor, inspection of the castle, and tea.
26 London, no arrangements, Sunday.
27 Plant visitation London district. Dinner-dance in the evening to which all members of the American delegation will be invited by the Iron and Steel institute and London branch of the Institution of British Foundrymen.

British Tour

28 3:30 p. m. Leave for Sheffield from St. Pancras station.
7:06 p. m. Arrive Sheffield. Royal Victoria Station hotel.
29 Plant visitation at Sheffield, with reception and dinner in the evening by Sheffield branch, Institution of British Foundrymen.
30 Excursion by motor to the Peak District and the Dukeries, Haddon Hall, Blythe, Edinstowe, Ollerton, Budby, Workshop and Anston.
31 2:22 p. m. Leave Sheffield.
5:00 p. m. Arrive Manchester. Midland hotel. Dinner of welcome given by the National Ironfounding Employers' federation at the Midland hotel.

September

1 Excursion visiting Smithfield market, University, Royal infirmary, Whitworth institute, Trafford park, Salford docks, Manchester docks, Town Hall, Albert square, cathedral, Royal exchange, art gallery and ship canal.
2 Probably will be devoted to a visit to Chester, an English city first settled by the Romans.
3 Plant visitation at Sheffield.
4 2:50 p. m. Leave Manchester.
4:50 p. m. Arrive Birmingham. Queen's hotel.
5 Plant visitation Birmingham district, with reception in the evening by Birmingham and Coventry branches of Institution of British Foundrymen.
6 Plant visitation Coventry district.
7 Excursion by motor car to Kenilworth, Guy's cliff, Warwick castle, Stratford-on-Avon, museum, Memorial theater, Harvard House, Trinity church and Ann Hathaway's cottage, etc.
4:24 p. m. Arrive London. Cecil hotel.
8 London, no arrangements.
9 London, no arrangements, Sunday.
10 London, official visit to Shipping, Engineering and Machinery Exhibition, Olympia.
11 2:00 p. m. Leave London for Paris with Institution of British Foundrymen party, via Dover-Calais.
9:40 p. m. Arrive Paris. Lutetia and other hotels.

International Foundrymen's Congress

12 9:00 a. m. Registration of visitors, distribution of badges, and reception at the Ecole des Arts et Metiers, Boulevard de l'Hopital.
10:00 a. m. Opening ceremony by the secretary for technical education of the French government, followed by a technical session.
3:00 p.m. Visit to the exhibition of foundry and shop equipment and the school foundries and workshops.
13 9:00 a. m. Technical session in English with papers by members of A. F. A. and I. B. F.
2:30 p. m. Plant visitation, Paris district.
14 9:00 a. m. Technical session.
1:00 p. m. Luncheon at the Eiffel tower, visit to the tower machinery.
3:00 p. m. Visit to Paris foundries.
15 9:00 a. m. Final technical session.
1:00 p. m. Meet at the pleasure boat LE TOURISTE, on which luncheon will be served, for excursion to St. Gervais and visit to the forest and castle.
5:30 p. m. Return to Paris.
7:30 p.m. Interallied foundrymen's banquet.
16 No arrangements, Sunday.
17 Paris, sightseeing.

Continental Tour

18 5:00 p. m. Leave Paris, Gare de l'Est. Dinner on train.
9:42 p. m. Arrive Nancy. Grand and other hotels.
19 Plant visitation Nancy district, including trip to salt mine.
20 Leave Nancy by motor car for American battle fronts via Mousson, St. Mihiel and Verdun to Metz. Hotel Royal and other hotels.
21 10:57 a. m. Leave Metz; lunch on train. Arrive Namur 4:54 p. m., leave Namur 5:50 p. m.
7:55 p. m. Arrive Liege. Hotel de Suede and other hotels.
22 Visitation to Cockerill works at Liege and to the forts of Liege with a reception by the colonel commanding. reception and dinner in the evening by Belgian Foundrymen's association.
23 9:26 a. m. Leave Liege.
10:35 a. m. Arrive Brussels. Motor char-a-banc to meet train for three-hour drive around city. Hotel Metropole.
24 8:52 a. m. Leave Brussels.
11:19 a. m. Arrive Lille. Hotel Bellevue and other hotels. Plant visitation at Lille, including Croix works of International Harvester Co. of America.
25 9:10 a. m. Leave Lille.
12:10 p. m. Arrive Paris. Hotel Wagram.
26 Leave Paris by boat train for Cherbourg and embark on White Star line SS. HOMERIC.

October

2 Due to arrive in New York.

number of famous steel foundries. Sheffield also turns out some of the largest gray-iron castings produced in Europe. Ingot molds for armor plate weighing over 100 tons are cast frequently. In addition to plant inspection, the Sheffield program includes a dinner to be given by the Sheffield branch of the Institution of British Foundrymen, and a special excursion by motorcar to Haddon Hall, the Dukeries, Peak district, and other famous historic spots.

The party will journey from Sheffield to Manchester by an unusually scenic route, traversing one of the busiest industrial sections of Great Britain.

While in Manchester the visiting delegation will visit plants and be entertained at dinner by the executive board and management committee of the National Ironfounders' Employers' federation of Great Britain. In addition, a sightseeing excursion by motorcar to all points of interest in the Manchester district will be provided. It also is probable that on Sunday, Sept. 2, the visiting foundrymen will be taken on a special motor trip to the old walled town of Chester. Chester was established originally by the Romans after Julius Caesar's conquest of Briton. It possesses unrivalled archeological interest. After leaving Manchester on Tuesday, Sept. 4, three days will be spent in the Birmingham and Coventry districts, otherwise known as the "black country." The district takes its name from years gone by when pig iron was made in open-top furnaces. At present it is one of the most beautiful regions in England as well as being a manufacturing center of unusual importance.

At England's Foundry Center

Birmingham is the foundry center of Great Britain. Such is the concentration of British industry, that within a short distance of Birmingham are 988 gray iron foundries and 178 malleable shops, together with a large number of steel foundries, brass foundries, machine shops, pattern shops, etc. Dud Dudley, to whom the world is indebted for the modern method of making pig iron, was born only eight miles from Birmingham in 1599. Birmingham also was the home of James Watt, the inventor of the steam engine, Joseph Priestley, the discover of oxygen gas, and many other distinguished engineers and men of science. It was within the precincts of Birmingham university that the effect of silicon on cast iron was first investigated by Professor Turner, who is still in charge of the metallurgical department of the university. Birmingham is also the headquarters of the British Cast Iron Research association. Its population at the present time is about a million. The manufacture of foundry equipment is one of the chief industries of Birmingham.

Coventry, which lies a few miles south of Birmingham, has a population of 128,000. On account of its large number of automobile factories it might be called the Detroit of Great Britain. In addition it is one of the oldest towns in the United Kingdom and possesses many buildings of unusual historic interest. In Coventry the manufacture of gray iron piston rings by centrifugal casting methods has been brought to a high state of perfection.

Leave for Paris Sept. 11.

The program for the visit of the members of the American Foundrymen's association to Birmingham includes a reception at which the Birmingham and Coventry branches of the Institution of British Foundrymen will be the joint hosts. A number of the most important works in the Birmingham and Coventry district also will be inspected.

On Friday, Sept. 7 the party will visit the literary and historic shrines of England at Stratford-on-Avon, Warwick, and Kenilworth, the first, of course, being world-famous as the home of Shakespeare. The two latter towns are known for their splendid medieval castles.

Returning to London, the party will be allowed two days for informal sightseeing and shopping, the sojourn in London to be concluded by a visit to the engineering exhibition which will be held in the big Olympia pavilion in September. This exhibition includes foundry equipment, machine tools, machinery for handling materials, ship fittings, and engineering appliances of all sorts, there usually being over 150 separate exhibits.

The tour of England being completed, the party will leave for Paris, Tuesday afternoon, Sept. 11, on a special train together with a large number of members of the Institution of British Foundrymen who will also be going to the Paris convention. Crossing by the historic Dover-Calais route, the gay city of Paris will be reached at 9:40 Tuesday evening. As far as possible members of the American and British delegations will stop at the same hotels in Paris. The headquarters for the English speaking visitors will be at the hotel Lutetia.

The international foundrymen's congress an exhibition will be formally opened Wednesday morning, Sept. 12 by the secretary for technical education of the French government. The exhibition of foundry supplies and equipment will commence on Sept. 2, and will, therefore, be in full operation when the American and British visitors arrive. This exhibition will be held at the Ecole des Artes et Metiers, Boulevard de l'Hopital on the south side of the river Seine. Unusually satisfactory facilities for both the exhibition and the meetings are available, and the school itself being one of the most famous centers for technical education in Europe, is well worth a visit. The school's foundry and machine shops are among the best equipped in the old world. Details of all the proceedings at the French foundry convention are given in the accompanying program. There will be five professional sessions for the reading and discussion of papers. The session in English will be held on Thursday, Sept. 13 at 9 a. m. Papers will be contributed by members of both the American and British foundrymen's associations.

The French foundrymen's association is also providing an unusually attractive entertainment program together with special facilities for visiting foundries. Paris is a large foundry center, as well as being headquarters for many important French and foreign companies.

The special program provided for the foundry convention includes visits to prominent French foundries in the vicinity of Paris, luncheon at the Eifel Tower, a steamboat trip on the Seine to St. Gervais and a banquet at one of the famous Paris hotels. The latter is expected to be one of the most brilliant gatherings of foundrymen from all over the world which has ever taken place.

Tours on the Continent

After two days for private sightseeing and shopping in Paris following the foundry convention, the members of the American and British delegations will divide. Some who may desire to do so can return to London or travel privately to other parts of Europe. A small party will be entertained at Creusot, France, by Schneider & Co., the famous French armament firm. This will afford not only an unusual opportunity to visit the center of France, but the privilege of studying one of the largest and most completely equipped foundries and steel plants in Europe.

The main party will leave Paris Tuesday afternoon, Sept. 18, for a week's tour of France and Belgium. The first stopping point will be

Nancy, one of the most beautiful towns in old Lorraine. Visits to points of interest and industrial plants in the vicinity will be made on Sept. 19 under the auspices of the French association. The program will include a trip to a salt mine.

Thursday, Sept. 20, will be devoted to a pilgrimage by automobile to the American battle centers, including St. Mihiel, the Argonne, and Verdun to Metz. Lunch will be served en route and an unusual opportunity will be afforded to visit one of the most interesting parts of the war zone. From Metz the party will travel by rail through the interesting industrial sections of Luxembourg and Belgium to Liege.

At this historic Belgian city the party will be entertained at dinner by the Belgian foundrymen's association and an opportunity will also be afforded to inspect the famous forts of Leige where the German advance was first checked in 1914. There will also be an opportunity to visit some of Belgium's famous industrial establishments.

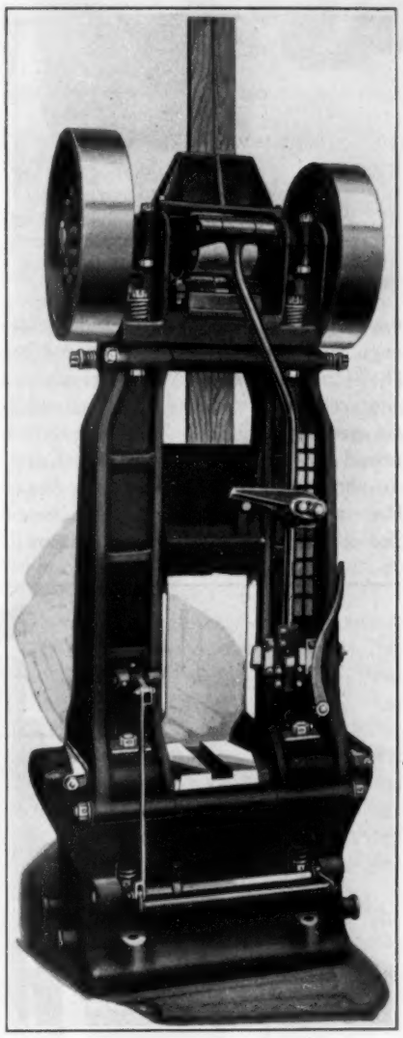
A day will be spent in Brussels where many points of historic and industrial interest will be visited. Leaving Brussels the party will travel to Lille, which is right at the heart of the old western front. By making short trips out of Lille practically all of the famous sectors on the northern battle line can be visited including the Menin road, Messines ridge, the Somme, etc. At Lille also an opporunity will be afforded to visit the American owned and operated plant in Europe, that of the International Harvester Co.

From Lille members of the party can proceed either to Paris or London and thence to other parts of Europe, or home to the United States. Arrangements have been made for the main body of the American delegation to return on the White Star liner HOMERIC, leaving Cherbourg and Southampton, Wednesday, Sept. 26, arriving in New York, Oct. 2.

"Electric Heat" is the name of the new miniature publication issued recently for the first time by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. The pamphlet, dealing with industrial electric heating problems, will be published frequently, at no specific intervals. Among the articles of interest in the first issue are those by Prof. W. Trinks, of the Carnegie Institute of Technology, on "Advantages and Limitations of Electric Heat," "Reduced Labor—A By-Product," by M. R. Armstrong and a solution to a difficult heating problem by F. W. McGraw.

Make Changes in Design of Board Hammers

The Erie Foundry Co., Erie, Pa. recently has brought out a new line of board drop hammers which are characterized by a refinement in detail rather than by any radical change from the accepted principles of construction. A front view of the new board hammer



BOARD DROP HAMMER HAVING NEW TYPE OF LATCH

is shown in the accompanying illustration.

Among the outstanding features of the new device are wedge adjustment of the frame across the anvil, the use of tie bolts and separators between the frames at the bottom, and a new type of latch. It is claimed that the wedges hold the frames of the anvil together in a solid unit, making it easy to maintain the alignment.

Several details of the operating mechanism have been changed. The friction bar drops vertically in guides, the latch bar being moved by the decending ram from under a block which fits against a shoulder on the bar. As the ram ascends a pin strikes on one end of the roll release lever, which is pivoted on a block clamped to the friction bar, causing the friction bar to be lifted gradually. The length of the stroke is varied by the roll release lever bearing on a pin which is adjustable up and down on a rack cast to the frame.

Anvils can be furnished in the ratio of 15 to 1 or 20 to 1 to the weight of the ram. The ram can be forged or made of cast steel and the pulleys of wood, paper or steel. The new line of hammers is built in a variety of sizes ranging from 200 to 4000 pounds weight of falling parts.

Bending Machine Handles Medium Sized Work

A hand bending machine having a wide range and built for light and medium sizes of stock recently has been introduced by the D. A. Hinman & Co., Sandwich, Ill. This bender when used with regular equipment will bend angles at any degree using round and flat stock. The machine will bend angle iron after cutting a V in the wing of the stock at the bending point, will bend flat stock edgewise and with the U blocks, which are furnished if desired, will bend U's and hooks. For hot bending, flat stock may be used up to 2x½ inches and rounds and squares up to 7-8 inches. Flat stock 1¼x⅜ inches and under may be bent hot. Flat stock can be handled cold up to 1½x¼ inches and rounds and squares up to ½-inch. The machine is quickly adjusted and easily operated.

Make Tests of Slags for Furnace Reactions

(*Concluded from Page* 106)

such a slag causes instability, and leads to a return of phosphorus to the metal.

3. Additions of basic oxides merely pass into solution and the type of compound is not altered. In certain cases there is probably a compound of lime and ferric oxide formed, which is comparatively stable.

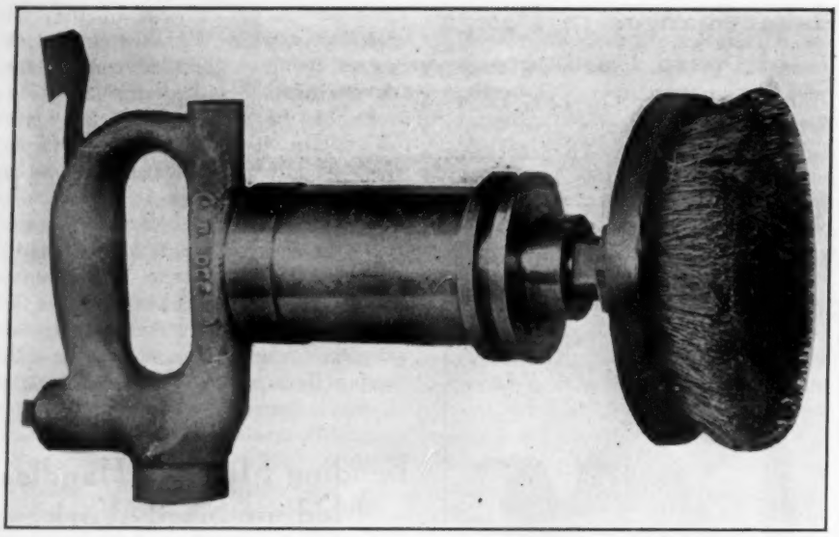
4. When an excess of lime is present, MnO is carried in solution and, under certain conditions, is reducible to manganese.

5. The relative rates of oxidation of carbon and phosphorus depend primarily on the basicity of the slag, and there are two critical compositions:

(*a*). When the total bases are sufficient only to form the slag given in (1) there is no further oxidation of phosphorus, and carbon is eliminated.

(*b*). When the lime content is sufficient to form the silicate and phosphate, carbon remains constant until nearly all the phosphorus is eliminated.

6. The removal of sulphur is only indirectly due to the presence of a high lime content, the direct agent is manganese, which is thrown into the bath from the slag.



PNEUMATIC BRUSH OPERATES AT A SPEED OF 5000 REVOLUTIONS PER MINUTE

Introduces Pneumatic Rotary Brush

Needs of foundrymen and others requiring a portable device for cleaning flat surfaces are served by a pneumatic rotary brush recently designed by the J. W. Paxson Co., Philadelphia. In addition to cleaning castings it is claimed that it is equally efficacious in cleaning steel and iron sheets, wood, stone, cement surfaces or in fact any large expanse of surface which cannot conveniently be taken to a fixed brush. The brush, made of No. 33 crimped steel wire in a twisted base inserted in a fiber block is operated by a motor constructed on the turbine principle claimed to be specially adapted to devices of this character on account of its lightness, strength and durability at a pressure of 50 pounds the motor develops a speed of 5000 revolutions per minute.

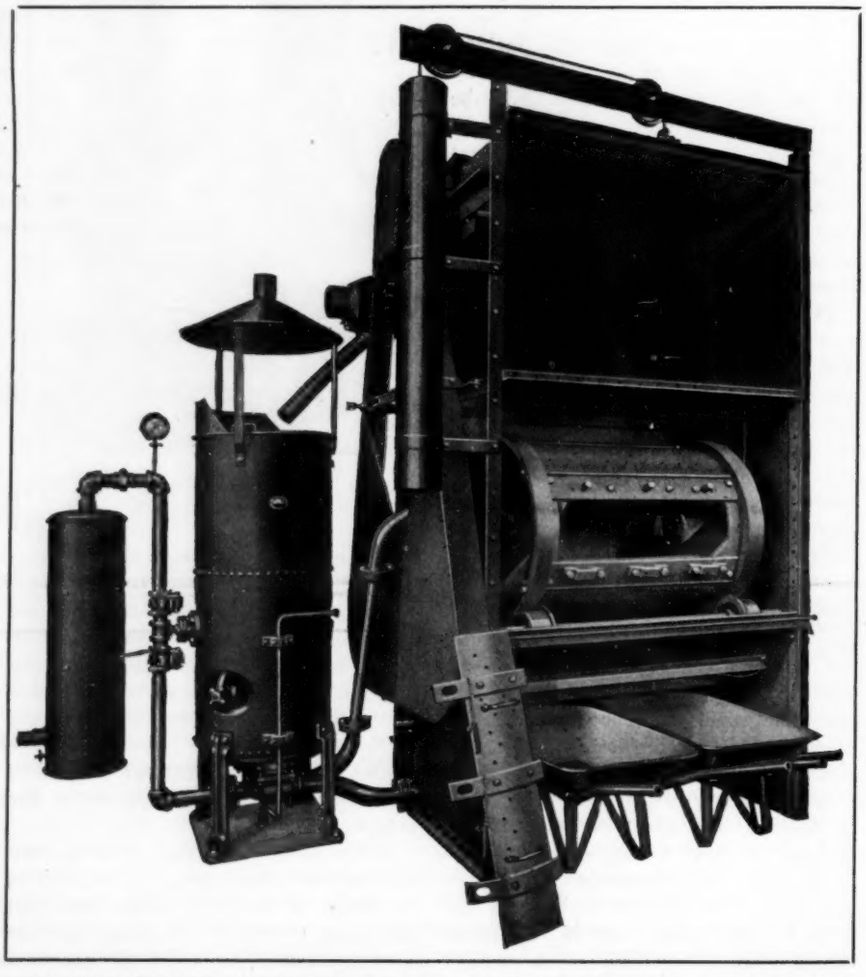
Sandblasting Machine Has Direct Pressure

Recent improvements in design and construction are incorporated in the piece of sandblasting apparatus shown in the acompanying illustration and made from the design of H. F. Hoevel by the J. W. Paxson Co., Philadelphia. The direct pressure system is employed which, it is stated, effects thorough and efficient cleaning at minimum cost and in a short time. The air carries the sand to nozzles through pipes made of steel and hard iron, heavily reinforced at all curves to prevent wear. The dust separator removes dust from the sand thus insuring that only clean sand will be re-used. An automatic filling valve in the sandblast tank opens immediately when the compressed air is shut off and allows the tank, to re-fill in little more than one minute. It closes automatically when the compressed air is turned on. The sand regulating valve permits an easy regulation of the abrasive without getting clogged. The dust is removed by an exhaust fan. Steel tires are shrunk onto heavy cast iron heads. The nozzles point into the barrel through a small hole in the end walls and in that manner the barrel is entirely free and unobstructed on the inside.

Spectroscope Sorts Scrap

Spectroscopic analysis of accumulated stocks of scrap metals has proved to be a satisfactory solution of the problem of sorting metal scrap and checking grades of steel in rolling mills, according to Adam Hilger, Ltd., London, Eng. The success depends upon the selection of the spectroscope and its definition by a spectroscopic expert. If this condition is fulfilled, any chemist or physicist can not only recognize the presence or absence of any metallic constituent but also roughly state the percentage, as quickly as the pieces can be placed in position and removed by one or more laborers.

Successful installations of industrial heating apparatus, listing more than 300 of the important installations, comprise an 8-page booklet published by Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. This pamphlet gives a definite idea of the extent to which electricity is being used for industrial heating purposes.



SHOWING MACHINE IN POSITION TO DUMP INTO WAITING WHEELBARROWS

To Adjust Freight Rates on Bituminous Coal

Washington, July 10.—Railroad freight rates on bituminous coal from the southern Ohio field and the so-called inner and outer crescents of the Kentucky, West Virginia, Tennessee and Pennsylvania fields to northwestern Ohio, Michigan and northern Indiana will be adjusted not later than Sept. 27, when the interstate commerce commission decision in the Ohio-Michigan coal cases becomes operative. The differential of 40 cents per ton in favor of southern Ohio coal over the inner crescent to the above-mentioned consuming territory is ordered increased to 50 cents; the differential of 60 cents over the outer crescent is to be made 75 cents. To effect these changes, inner crescent rates will stand, Ohio rates will be decreased 16 cents and outer crescent rates increased 50 cents.

The advantage of Detroit over Indiana and Michigan cities is to be lessened. The rate to Jackson, Mich., is not to exceed the Detroit rate by more than 10 cents per ton; the Lansing, Mich., rate by not more than 30 cents; the Elkhart, Ind., rate by not more than 40 cents; the Kalamazoo and Battle Creek, Mich., rate by not more than 50 cents; and the Grand Rapids, Mich., rate by not more than 65 cents. These changes are to be effected by increasing the rate from the Ohio field and the inner and outer crescents by 16 cents a ton, and reducing the rates to the other cities to the extent necessary.

The Ohio-Michigan coal cases aroused the interest of every coal association in southern Ohio, Kentucky and West Virginia, the chambers of commerce of Cleveland, Columbus, Cincinnati, Detroit and other cities, the utilities commissions of Ohio and Michigan and several score of industries in the consuming territory, including the McKinney Steel Co., Otis Steel Co., National Malleable Castings Co., American Rolling Mill Co., American Malleable Castings association, Albion Malleable Iron Co., Oliver Chilled Plow Works and Toledo Furnace Co.

Organize to Avoid Theft

Washington, July 10.—A bureau whereby marine underwriters, steamship companies, railway lines and shippers' organizations can co-operate in an attempt to eliminate losses from theft in the export trade is now being organized in New York City at the suggestion of the transportation division of the department of commerce and similar bureaus in other ports will be proposed. The transportation division has been making a study of pilferage and has learned that while proper packing eliminates much danger, still the evil cannot be eliminated unless all interested parties co-operate.

News of Societies

Past and Coming Meetings of National and Local Trade and Technical Organizations

PAPERS to be presented at the fall meeting of the American Electrochemical society, Sept. 27-29 at Dayton, O., will be of particular interest to electrical men, chemists, foundrymen and electroplaters Headquarters of the association will be at the Miama hotel. The technical meeting will be devoted to a symposium on "Electrochemistry of Gaseous Conduction." This session will include a number of interesting papers on triatomic hydrogen, hydrogen, ozone, X-ray tubes, oxidation of atmospheric nitrogen, etc. Duncan MacRae, research department, Westinghouse Electric & Mfg. Co., will act as chairman of this meeting.

The other subject to be covered is "Recent Developments in Electrolytic Refining of Metals." F. R. Pyne, United States Metals Refining Co., Carteret, N. J., will act as chairman. This program will embody papers on copper, tin, lead, nickel, zinc, iron, etc. The discussion on brass furnaces will be of particular interest to foundrymen in general. The subject of electric melting will occupy a part of the program and it is expected that some reliable figures on the relative costs of melting by electricity and fuel fired furnaces will be brought out.

A number of excursion trips to industrial plants and places of interest are planned. Among the places to be visited are the plants of the National Cash Register Co., Delco-Light, General Motors research laboratories, McCook field, Wilbur Wright field and the American Rolling Mill Co.

* * *

To Hold Exposition

Frequently the heads of commercial organizations will not spend money on research and research equipment unless immediate returns in dollars and cents can be seen. That chemical research has a real earning power in any business will be shown in the series of educational exhibits at the 1923 National Exposition of Chemical Industries by the American Chemical society. The exposition will be held this year at the Grand Central Palace, New York, Sept. 17-22. The American Ceramic society will hold its regular fall meeting this year in conjunction with the exposition. The ceramic organization will meet Wednesday afternoon, Sept. 19.

* * *

Railway Association Meets

The nineteenth annual convention of the Canadian Electric Railway association held at Exhibition Park, Toronto, June 27-30 was attended by more than 100 delegates. An address was delivered by Alexander Jackson of the Public Service Railway Co., Newark, N. J., dealing with street railway problems. W. G. Gordon read a paper on "The Proper Motor for a Given Cycle of Duty." H. E. Weyman presented an elaborate report prepared by a special committee on the valuation, maintenance and depression of street railway assets. An exhibition showing the different types of rolling stock and various railway devices excited much interest, and there was also a display of exhibits by the Ontario Safety league.

Convention Calendar

Aug. 20-30—American Institute of Mining and Metallurgical Engineers. Meeting at Quebec, Canada. F. F. Sharpless, 29 West Thirty-ninth street, New York, is secretary.

Sept. 10-14—American Chemical society. Fall meeting, Milwaukee. L. Parsons, P. O. box 1515, Washington, is secretary.

Sept. 17—American Ceramic society. Fall meeting, Grand Central Palace, New York. R. C. Purdy, Ohio State university, Columbus, O., is secretary.

Sept. 17-22—Chemical Industries. National exposition, Grand Central Palace, New York.

Sept. 24-28—American Association of Iron and Steel Electrical Engineers. Convention and exhibition. Auditorium, Buffalo. Headquarters of the association are located at 1007 Empire building, Pittsburgh.

Sept. 27-29—American Electrochemical society. Annual meeting at Dayton, O. Dr. Colin G. Fink, Columbia university, New York, is secretary.

Oct. 8-12—American Society for Steel Treating. Annual convention at Pittsburgh. W. H. Eisenman, 4600 Prospect avenue, Cleveland, is secretary.

Which Way Is Business Headed?

Fears That 1923 Would Bring a Collapse Similar to 1920 Have Prevailed—Appraisal of Facts Show Conditions Are Dissimilar At Many Vital Points—Situation Sounder Now

BY JOHN W. HILL

BUSINESS during the last few months has been shuddering under the shadow of 1920. Fears that the events of that disastrous year were to be repeated were aroused by the tremendous industrial expansion of last spring. Conditions today were seen as comparable to those of three years ago. That meant a severe and extended decline in trade and in values.

In view of present apprehensions it is worth while to attempt a calm appraisal of the forces underlying economic conditions in both 1923 and 1920. Such a survey leads to two conclusions.

One is that there are sufficient similarities between the situation now and that of three years ago to justify a degree of business conservatism.

The other is that conditions this year are immeasurably sounder than they were in 1920 and that expectations of a drastic, prolonged slump based upon comparisons with the earlier year are without foundation.

There is one striking likeness between 1920 and 1923. This is that the revival of both booms was to make good certain shortages. In the earlier year the scarcities created by the war had to be filled up. This time it was the vacuum of goods caused by the 1921 depression that stimulated the nation's mighty productive sinews to unequaled feats.

In 1920 when the shortages were made up the fact was hidden by the smoke screen of rash speculation, overbuying, and by dizzy price inflation. In the face of accumulating stocks, famine reports filled the air. Price increases of 10 per cent a month were common in numerous lines. Credit was absorbed in carrying high priced inventories, in speculation and in excessive plant expansion.

Values soared out of the reach of the country's purchasing power. Consumption was checked. Then the bubble burst. That meant the collapse of values, the dumping of enormous stocks upon a reluctant market, and the sweeping, paralyzing curtailment of industry.

That picture does not fit into the situation this year. There has been some overproduction in a few lines, but there is no general overhanging surplus of goods. Price inflation was checked far under the 1920 tops. Purchasing power is large and consumption continues unabated. The most potent factor in the 1920 debacle, a strain upon credit, is wholly lacking.

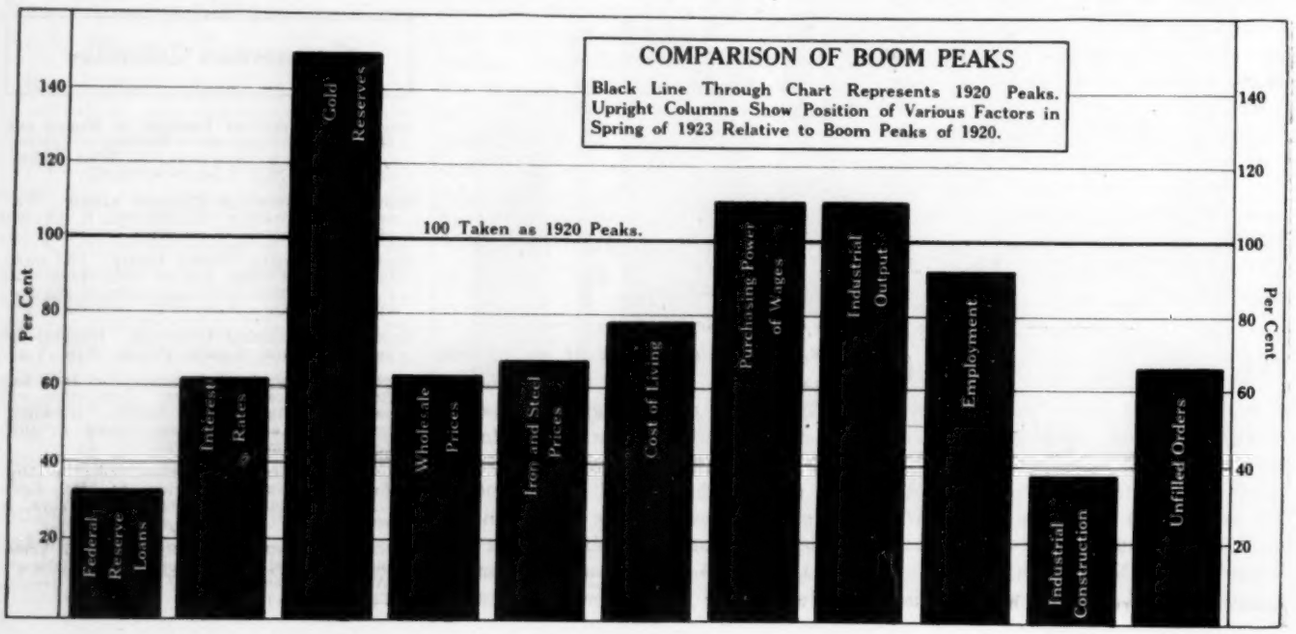
The most striking contrast between the two periods is to be found in the phsychology of business men. In 1920 all warnings of the dangers ahead went unheeded. The grand spree was to last forever. Last spring when the appearance of inflationary tendencies brought forth warnings, the response was quick, amazingly so. The healing wounds of 1921 were still sensitive.

Business turned pale at the recollection of the operating room, the surgeon's knives, and the anaesthetic of drastic deflation. The brakes were applied with celerity and dispatch. Most of the unhealthy development which brought disaster in three years ago were checked before serious harm

Business Series Continues

THIS is the third of a series of articles appearing in IRON TRADE REVIEW *on the business situation. The first appeared in the June 28 issue and dealt with the prevailing uncertainties. The second appeared in the July 5 issue and analyzed current industrial production. In the July 19 issue the problem of the farmer will be discussed. The final article in the July 26 issue will be devoted to a summary of the whole situation and of the probable future trend.*—THE EDITOR

The author is financial editor of IRON TRADE REVIEW.



had been done to the economic structure. This display of caution, where headlong recklessness ruled three years ago is a fundamental and constructive difference between the two periods.

Wide disimilarity between 1923 and 1920 is also to be found in the field of finance. Three years ago the magnificent and elastic credit system of the United States was being stretched to the breaking point. Interest rates were ruinously high. Call money on the New York stock exchange touched 25 per cent on at least one occasion. Commercial paper rates stood at 8 per cent. Rediscount rates of the federal reserve system were at 7 per cent.

Today these conditions do not exist. The outstanding contrasts in the credit situation are shown in the following comparisons:

	July 1923	July 1920	Percentage change
Cash ratio	75%	41%	+84
Gold Reserves	$3,110,700,000	$1,972,999,999	+58
Total Bills on Hand	1,128,000,000	2,935,000,000	—61
Note Circulation	2,226,900,000	3,169,000,000	—29
Commercial Paper loan rate	5%	8%	—37
Fed Res. Rediscount rate	4½%	7%	—36

The most significant difference between the state of bank credit now and in 1920 lies in the fact that while total loans are larger, commercial loans are smaller than three years ago. Bank holdings of securities have increased by 26 per cent over 1920. At the same time commercial loans of banks are 7 per cent less than in the spring of 1920. Since the bottom of the loan liquidation period in 1922, commercial loans have increased only 7 per cent. From the low point of the depression in 1921 industrial production increased 70 per cent. In May it was 10 per cent over the peak of three years ago. From 1919 to 1920 bank loans expanded 43 per cent while production was increasing only 25 per cent.

Thus it appears that with a smaller volume of bank loans than in 1920 the country is financing the largest volume of industrial activity ever known. The slight increase in loans compared with tremendous expansion of output, shows the fundamental health of the present situation. It convincingly indicates the lack of heavy and excessive inventories. If these existed they inevitably would show in bank loans.

Frequently in 1920 it was said that industry was locking up its cash reserves in brick and mortar. This meant that industrial expansion was being pushed beyond the limits of sound judgment or of the country's needs. Such proved to be the case. Many business men had been misled by the illusion of an endless day of increased profits and boundless demand. The following table showing the record of building operations in 27 northeastern states in square feet as compiled by the F. W. Dodge Co. reveals the difference between 1923 and 1920:

	Squarefeet 5 Months 1923	5 Months 1920	Percentage change
Total Building	272,379,000	223,500,000	+22
Residential Building	159,700,000	74,800,000	113
Industrial Building	31,800,000	80,300,000	—60

It appears from this record that while all building in the first five months of this year was 22 per cent in excess of the same period in 1920, industrial building was 60 per cent less. The increase in the aggregate is accounted for by the residential construction boom and by other building activities. Nothing shows with greater vividness the saving caution of 1923.

Instead of pouring its surplus into inventories and into plant expansions, industry is accumulating cash reserves. Deposits of member banks of the federal reserve system are $1,835,000,000 or 9 per cent greater than they were three years ago.

The course of prices this year has caused much concern in some quarters. Fears have been expressed that inflation has carried values to a point where consumption will be cut off precisely as in 1920. Early in 1923 many commodities began to display inflationary tendencies. Cotton, sugar, copper and a few other products soared from 10 to 15 per cent or more in the space of a few months. The wave of caution which appeared late in March soon halted this rise. Declines followed in numerous instances. This year there has been no freight congestion to help create artificial values as in 1920. How the commodity price peaks compare with those of 1920 are shown in the following table:

	Peak	Peak	Percentage change
Bureau of Labor statistics	247	160	—35
Dun's Index	$193.1	$263.3	26
Nat'l. Industrial Conference Board cost of living	160	205	—21
Iron Trade Review Composite Iron and Steel price	$47.70	$68.29	—30

Dun's index number has been falling for three months. It has declined 2 per cent. In 1920 the drop from the peak was twice as rapid.

The demand for goods by final consumers is the ultimate test of prosperity. The masses of people usually buy as long as their incomes will meet the price level. A buyers' strike is nothing more nor less than the exhaustion of purchasing power because of soaring values. That was what happened in 1920. The cost of living had increased by about 20 per cent over the preceding 12 months. At the top in July, 1920, it stood 105 per cent above 1914. Buying ability was seriously crippled.

On June 1, 1923, the cost of living as computed by the National Industrial Conference board was 60 per cent over 1914. It had advanced only 4 per cent in the past 12 months. The purchasing power of wages is not only 33 per cent higher than the prewar level, but 10 per cent greater than in 1920. The farmer's purchasing power has shown a loss from 1920. However, all reports show consumption continuing at a high rate.

The buyers' strike this year, save for the spasmodic fruitless sugar strike and the builders' strike, was confined to producers and distributors. It reflected their doubts and fears as to demand and price levels. In 1920 the situation was reversed. Producers and distributors kept their heads in the clouds until jolted to reality by the drastic drop in consumption.

Efficiency of labor is much greater this year than in 1920. In June, 1920, total employment in 23 industries surveyed by the National Industrial Conference board reached 697,000. In April this year in the same industries it was 640,000 or about 8 per cent less than in 1920. With this decrease in workers, production had been increased 10 per cent. That was a gain of nearly 18 per cent in efficiency.

Pig iron output attained a level 14 per cent above the 1920 peak in May, while total employment in the iron and steel industry is nearly 10 per cent less than it was three years ago.

An outstanding feature of this year's boom has been the lack of overbuying and duplicate ordering as in 1920. In that year a huge house of cards was erected through the pyramiding of orders. That meant an epidemic of cancellations when the check came. With large consumption and hand-to-mouth buying there has been no cancellations this year. The more conservative buying which generally prevails, is admirably illustrated in iron and steel. Although steel output and consumption attained unprecedented levels this year, unfilled orders of the United States Steel Corp at the peak this spring were fully 34 per cent below the top of 1920.

Submit Output Data in Basing Case

Production and Consumption Statistics Offered in Final Hearing of Pittsburgh Plus Testimony at Chicago—Exhibits Compare Volume of Business Done by United States Steel Corp. and Competitive Companies

CHICAGO, July 10.—Final taking of evidence in the Pittsburgh basing point case before the federal trade commission at Chicago has been taken this week and no further hearings will be held in that city. The concluding session of the hearing has been devoted to presentation by the United States Steel Corp. of evidence bearing on the production and consumption of rolled steel at Chicago and in western territory. It is the purpose of this evidence to establish the contention of the steel corporation that demand for steel in the West exceeds production and that part of the requirements of western users must be obtained from eastern mills.

Some time ago salesmen for the Steel corporation placed in evidence a mass of sales reports which were intended to establish the volume of consumption. To supplement this a number of consumers have been placed on the stand to put in evidence exhibits showing the actual consumption of steel by their companies over a period from 1918 to 1923.

An interesting exhibit was offered in the past week's testimony by William S. Gray in charge of statistics for the American Iron & Steel institute, dealing with the relative importance in tonnage, of various producing territories. These figures were taken from the records of the institute and present the annual capacity of finished rolled steel and iron of the entire country as of Dec. 31, 1922, by the principal producing districts. They are given in the accompanying table.

It will be noted from the table that the production of ingots and rolled steel in Chicago territory is the second largest in the United States, but is still considerably below that of Pittsburgh. The Philadelphia district ranks third, the valleys are fourth in the production of rolled steel, and third in the output of ingots, and then in order follows the Cleveland, Columbus, Buffalo, Johnstown, Southern and other districts.

Another exhibit by Mr. Gray shows the production of ingots by the Steel corporation and competitive companies for 1908, 1913, 1918 and 1923, with the percentage of increase of each of these years over the preceding period and the percentage of increase in capacity of 1923 over each of the preceding years. This exhibit is also arranged according to the various producing districts.

Ingot and Rolled Steel By Districts

Gross Tons

	Ingots	Rolled steel
Eastern mills	629,100	710,800
Philadelphia	6,904,060	6,229,460
Johnstown	2,124,850	1,236,360
Buffalo	2,760,900	1,754,300
Pittsburgh	13,351,715	11,962,000
Wheeling	2,590,750	2,004,800
Valleys	7,382,000	4,279,900
Cleveland	3,660,700	1,866,900
Columbus	3,182,000	2,169,475
Detroit	18,000	65,000
St. Louis	635,000	1,132,800
Southern	1,337,000	1,053,900
Duluth	540,000	123,800
Chicago and west..	10,405,910	8,568,300
**Total ..... **	**55,521,985**	**43,157,845**
Steel corporation...	22,729,625	15,339,800
Competitors	32,792,360	27,818,045

A recapitulation of the ingot figures in gross tons and percentage of gain for the entire country is as follows:

Ingot capacity	Steel corporation	Independents	Total
1908	15,304,000	14,237,259	29,541,259
1913	18,942,950	19,079,334	38,022,284
1918	22,283,800	29,407,060	51,690,860
1923	22,729,625	32,792,360	55,521,985
Increase			
1913 over 1908	23.8	34.0	28.7
1918 over 1913	17.6	54.1	35.9
1923 over 1918	2.0	11.5	7.4
1923 over 1908	48.5	130.4	87.9
1923 over 1913	20.0	71.9	46.0

Each of these exhibits was accompanied by the productive capacity of each plant in each district as the basis from which the totals were derived.

Car Company Looking For Continued Demand

A surplus of $4,113,611 after all charges is reported by the American Car & Foundry Co., for the fiscal year ended April 30. This compared with a surplus of $4,483,320 in the preceding year. Profits of $10,633,564 were larger than the $9,051,721 of 1922, but charges were heavier.

The balance sheet as of April 30 last showed current assets of $130,113,249 and current liabilities of $12,718,937. Cash on hand amounted to $5,536,610 and holdings of securities of other companies aggregated $5,536,721. Government securities amounted to $2,146,812; materials, $29,111,437, and receivables $15,023,070.

William E. Woodin, president of the company, said:

"Buying from the railroads during the year has been in fair volume. The company begins the new year with an amount of business on its books comfortably in excess of that at the beginning of the preceding period, and there is every reason to believe that the business done during the year now current will be equal at least to that done during the year just closed.

"The need of new equipment still continues, and with the further development of the fairer public attitude toward the railroads referred to in the letter of June last to stockholders, the problem of financing its purchase should be less difficult of solution than it has been for some time past."

Output of Beehive Coke Shows a Decline

Washington, July 10.—According to reports of the principal coke carriers the total output for the week ending June 30 was approximately 399,000 net tons, a decrease of about 14,000 tons over the week preceding the geological survey reports. The greatest decrease in production occurred in Alabama, Kentucky, Tennessee, and Georgia, production in the other districts remained about the same.

The weekly comparison of output follows:

	Week Ended June 30 1923 a	June 23 1923 b	July 1 1922
Pennsylvania and Ohio	323,000	324,000	82,000
West Virginia	22,000	23,000	7,000
Ala., Ky., Tenn., & Ga.	20,000	36,000	10,000
Virginia	16,000	14,000	6,000
Colorado and New Mexico	10,000	9,000	6,000
Washington and Utah	8,000	7,000	3,000
United States Total	399,000	413,000	114,000
Daily Average	67,000	69,000	19,000

(a) Subject to revision. (b) Revised from last report.

Preliminary estimates of June production of bituminous coal show a total of 45,644,000 tons. Soft coal output this year has been slightly ahead of the average for years of industrial activity, and 35 per cent ahead of that for years of depression.

Wages of all employes of the Green Bay (Wis.) Foundry & Machine Co. were increased 10 to 25 per cent, effective July 1. The company manufactures paper mill machinery and is about to make an addition to its plant.

Federal Coal Regulation Urged

Government Ownership of Mines Opposed by Fact-Finding Commission in Report on Anthracite Industry, but Public Supervision Is Declared Imperative—Program Proposed for Settlement of Disputes

WASHINGTON, July 10.—Although the bituminous coal situation differs from that of anthracite in that the former is not concerned with a limited supply, the federal coal fact-finding commission's preliminary report on anthracite mining is of interest to the iron and steel industry as it gives an insight into what may come in the bituminous coal report of the commission, due Sept. 22. The coal commission says, in part, in its anthracite report:

"Coal is quite as much a public necessity as gas, street railway service, or any other service or commodity that has been brought under public regulation. There should be no secrets from the public in regard to mining costs, profits, salaries, wages, or corporate relations. Banks and insurance companies are privately managed because we find by experience that they can be managed more efficiently and economically on the principle of individual responsibility. But, like railroads, they are required to report to a public authority and they are subject to such regulation in the public interest as experience may show to be necessary and public opinion may from time to time approve. The guiding principle in such enterprises is no longer maximum profit to owners but maximum service to the public.

Time Has Come For Control

"The time has certainly come to establish the same controlling idea in the anthracite coal industry. There is not as yet a sufficient basis in knowledge or experience to determine what form of control or regulation will ultimately be most advantageous. What is clear is that in the operation of coal mines, as in the operation of railroads, telephones, water companies, or banks, the public interest must be respected and served, and that this requirement places limitations on the rights of owners of coal lands, operators, mine workers, carriers, and dealers. The commission believes that the principle of individual and corporate responsibility should be maintained as most likely to insure economical and efficient management of the industry, and that the public interest may be adequately safeguarded by the creation of a government authority with power to require financial and operating reports, to prescribe uniform methods of cost accounting, and to determine the conditions on which coal may be shipped in interstate commerce.

"The President of the United States should be authorized by act of congress to declare that a national emergency exists whenever through failure of operators and miners in the anthracite industry to agree upon the terms of employment, or for any other reason, there is a suspension of mining operations, seriously interrupting the normal supply of anthracite fuel in interstate commerce; and to take over the operation of the mines and the transportation and distribution and marketing of the product, with full power to determine the wages to be paid to mine workers, the prices at which the coal shall be sold, and, subject to court review, the compensation to be paid to land and mine owners."

Referring to the exhaustion of the anthracite supplies the commission lists the most promising supplementary fuels, including "coke specially prepared for domestic use either in by-product ovens or by some process of low-temperature carbonization." The commission's statement of civil rights has a general application. It follows:

"The principles that a man has a legal right to work free and unimpeded by threats, duress, coercion, or restraint, when, where, and for whomsoever he chooses; that a man has a legal right to employ and discharge as he pleases; and that men have a right to bind themselves together for collective bargaining touching wages and working conditions are freely admitted by everyone. These principles honestly lived up to would keep the open shop and at the same time permit the existence of the union. But as a matter of fact, the open shop in a unionized mine is open to the union miner and closed to the nonunion miner, while the open shop in the nonunion mine is open to everybody save a United Mine Worker. No opinion will now be expressed as to whether this condition has arisen from an attempt to unionize the mine and not the miner.

"Without attempting to trace to its origin the first violation of the law to fix the primary responsibility for breaches of the law and starting the trouble it will be sufficient to say that no side, whether union or nonunion, can show absolutely clean hands in keeping and helping to enforce the civil rights of American citizens. These breaches of the law have doubtless arisen upon the theory that vast aggregations of capital and vast aggregations of labor have just the same rights as the individual, but the commission believes that the innocent bystander has some rights which both of these contending forces are bound to respect. Corporations, whether *de facto* or *dejure*, are not individuals, and they may not exercise unrestrained the natural rights of man.

"If, as the commission believes, the mining of coal is clothed with a public interest, then both sides must—peaceably and voluntarily if they will and under compulsion if they will not—deal with each other in the light of the general welfare of the American people; and while the commission believes there is ample authority to punish a conspiracy of either operators or miners, or both, directed against the general welfare of the people, if there be not such legal authority, it will be recommended for enactment, in the commission's final report."

Some of the commission's recommendations follow:

"The commission recommends that in the next agreement there should be a provision for a continuing umpire and that he or an assistant named by him should sit with the conciliation board at all its meetings, but without a vote.

"So many changes have taken place since 1903 that the agreement should provide for a joint committee to work out a restatement of the whole agreement in the terms of today, and this agreement should be specific enough to be the code by which all persons having anything to do with the settlement of grievances shall be bound.

Renewed Agreements Too Rigid

"The renewed agreements have too rigidly retained the practices and conditions of 1902 and have not had adequate flexibility. A second joint committee should be provided for in the next agreement and directed to make an engineering study of the elements of the job in mining anthracite coal, for the purpose of building up a scientific and more equitable basis for rate making. Until, however, such committee shall disclose fundamental facts which shall form a decidedly better basis, the old 1903 base should be retained.

"The expiration of the contract in the anthracite region should not coincide with the expiration of that in the bituminous region. The contract should run for a definite period of time with the the proviso that it shall be deemed to be renewed for a like period of time except as to such provisions thereof in which notice of a desired change shall have been given by either party to the other at least 90 days before the renewal date. Upon these proposed changes the parties shall immediately confer and if, 60 days before the date fixed for the renewal of the contract, they have been unable to agree, they shall report such fact to the President of the United States, specifying clearly the controverted points. The President shall thereupon appoint a person or persons to inquire into and make public a report upon all the relevant facts in controversy before the date of such renewal shall have arrived.

"The commission recommends at this time no punitive legislation. It awaits with interest whether the next agreement entered into shall show a co-operative spirit, a clear idea of partnership on the part of all concerned in it, and a proper conception of the rights of the American people. These rights in the anthracite region are no different from those in the bituminous, and the judgment of the commission will be very largely affected by what takes place in the present negotiations."

Steadiness Found

In Sulphate of Ammonia Market—Situation in Distillates Unchanged

New York, July 10.—While slightly easier on export shipments, the market on sulphate of ammonia reflects considerable steadiness. Buying is listless, but with the large bulk of production going into annual contracts, the majority of which were closed during the past month, little surplus is accumulating. Slight falling off in production due indirectly to the warm weather is another strengthening factor. Prices on spot sulphate of ammonia for domestic consumption are $3.10 to $3.15, works, and those on material for export $3.40 to $3.45 port, in double bags, a decline in the latter instance of about five points.

Following the cessation of buying by the drug trade for the cleaning season, quotations on naphthalene have eased off until now the market is holding around 8 cents works, for flakes in carloads lots, and 9 cents for balls. In less than carload lots, the market is holding at 8½ and 9½ cents, respectively. At present there is little buying of any description, the market, however, not slumping off in the face of small purchases.

The situation in distillates is unchanged. Weakness continues to be reflected in benzol, and shading is still noted in some quarters. The generally accepted market is 27 cents works in tanks and 32 cents works in drums for pure benzol, and 25 cents in tanks and 30 cents in drums for 90 per cent benzol. Foreign demand is still noted, England and France being particularly active. Toluol is in fair demand with supplies fairly easy, and prices holding at 30 cents works in tanks and 35 cents in drums. Solvent naphtha is quoted at 27 cents in tanks and 32 cents in drums and commercial xylol at 29 cents in tanks and 34 cents in drums.

Coke Oven By-Products

Spot*

Per Gallon at Producers' Plants in Tank Lots

Pure benzol	$0.27
Toluol	0.30
Solvent naphtha	0.27
Commercial xylol	0.29

Per Pound at Producers' Plants

Phenol	$0.28
Naphthalene flake	0.08
Naphthalene balls	0.09

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	$3.10 to $3.15

Contract

Pure benzol	$0.27
Toluol	0.30
Solvent naphtha	0.27
Commercial xylol	0.29

Per Pound at Producers' Plants

Phenol	$0.28
Naphthalene flake	0.08
Naphthalene balls	0.09

*Spot distillate prices are subject to shading.

Tries New Plan to Block Sheet & Tube Merger

Another attempt to prevent the Youngstown Sheet & Tube Co. from taking control of the Steel & Tube Co. of America, has been made by the Allied Chemical & Dye Co. This interest, which is a minority stockholder in the Steel & Tube Co., has obtained a preliminary injunction in the court of chancery in Wilmington, Del., restraining the Steel & Tube Co. from distributing its assets among stockholders at the present time. A rule to show cause to the contrary has been issued by Chancellor Wolcott, returnable July 13.

The property of the Steel & Tube Co. was sold recently to the Youngstown Sheet & Tube Co., for approximately $33,000,000. Prior to the disposition of the property the Allied Chemical & Dye Corp., was granted an injunction prohibiting the transfer of the assets, but this injunction was vacated a short time ago and the sale concluded.

Directors of the Steel & Tube Co. voted to recommend to the stockholders liquidation of all of the preferred stock, of which $16,500,000 is outstanding, and all except a nominal amount of common stock. The stockholders have been called to a special meeting, to be held Aug. 7, for the purpose of voting upon the proposals of the directors. The charter of the company calls for a redemption of the outstanding preferred stock at $110 a share and accrued dividends in the event of liquidation of the company. It is not expected, however, that the preferred stock will be retired before Oct. 1, regardless of what action is taken at the stockholders' meeting.

The Allied Chemical & Dye Co. is credited with holding 20 per cent of the common capital stock of the Steel & Tube Co. of America. Its opposition to the disposition of the property to the Youngstown Sheet & Tube Co. is understood to be based upon the ground that the compensation was not in line with the real value of the property.

Lime Production Increases

Revised figures of the United States geological survey place the 1922 output of lime at 3,650,000 net tons, an increase of 44 per cent over 1921. The consumption of 1,486,000 tons of lime by chemical works in 1922 represented an increase of 55 per cent over 1921. The construction in dustries in 1922 took 1,893,000 tons, or 48 per cent more than in 1921.

Sizable Orders

Missing in Refractory Market—Chrome Demand Fairly Active

Pittsburgh, July 10.—Consumers of refractories are not placing sizable new orders as a rule but are buying regularly for repair purposes. In other words, they are placing orders only for what brick they have to have, usually in lots of 50,000 at a time. Suspensions issued several weeks ago have been recalled and shipments on old orders are going forward at a good rate. Occasionally a large order is placed such as that of the Wheeling Steel Corp., which recently closed on 1,500,000 silica and 500,000 fire clay brick, the latter going to one producer and the former divided among three others.

The Bourne-Fuller Co., Cleveland, bought 250,000 silica brick and three other orders placed with one interest here called for 400,000, 25,000 and 17,000 brick, respectively. On July 1, the Pennsylvania silica brick price was reduced $2 per thousand to $45, but Chicago and Birmingham prices are unchanged. Small lots of silica brick are being taken by a certain group of producers at $42.50 and some with no order books are even cutting that price to a $40 level. Fire clay prices are unchanged. One interest reports the receipt of more magnesite brick orders than chrome, but usually in small lots such as one, two or three carloads at a time. One order for this grade considered large calls for 25,000 brick. All of these are taken at the $65, seaboard base price. Chrome brick too, is fairly active in lots up to 50,000 brick each. The $50 price on chrome brick is fairly firm. Kiln operations generally are maintained at a 75 per cent basis but could be greater if proper labor supplies were obtainable.

Refractories

FIRE CLAY BRICK
(Per 1000 f.o.b. works)

Pennsylvania, No. 1	48.00 to 51.00
Pennsylvania, No. 2	43.00 to 46.00
Ohio, No. 1	45.00 to 47.00
Ohio, No. 2	40.00 to 43.00
Illinois, No. 1	48.00 to 50.00
Illinois, No. 2	45.00 to 47.00
Kentucky, No. 1	45.00 to 47.00
Kentucky, No. 2	40.00 to 42.00
Missouri, No. 1	43.00 to 45.00
Missouri, high grade	48.00 to 53.00
Maryland, No. 1	50.00 to 53.00
Maryland, No. 2	44.00 to 47.00

SILICA BRICK

Pennsylvania	45.00
Chicago	52.00 to 54.00
Birmingham	48.00

MAGNESITE BRICK
(Per Net Ton Seaboard Base)

9 x 4½ x 2½	$65.00

CHROME BRICK
(Per Net Ton)

9 x 4½ x 2½	$50.00

Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields

CHARLES S. BOARDMAN at a recent meeting of the board of directors of the Strong Steel Foundry Co., Buffalo, was elected vice president and manager of sales. Mr. Boardman who has always followed engineering work, is a member of the American Society of Civil Engineers. He was designing and construction engineer with the Lackawanna Steel Co. in 1901 when that company started construction of its plant at Buffalo. Upon its completion, Mr. Boardman became affiliated with an enterprise which later was known as Conkling & Boardman, consulting engineers. In this connection he served as engineer for several steel interests in and near Buffalo. During this time Mr. Boardman invented and patented what is known as the Lackawanna Steel Co. sheet piling, which now is being rolled extensively by the Bethlehem Steel Corp. In October, 1913, Mr. Boardman returned to the Lackawanna Steel Co. as engineer of the steel sheet piling department. In October, 1922, upon the purchase of the Lackawanna Steel Co. by the Bethlehem Steel Co., he continued in the same capacity, resigning recently to take up interests in the Strong Steel Foundry Co.

Samuel J. Reeves, who recently was elected president of the Phoenix Iron Co., with offices at 22 South Fifteenth street, Philadelphia, and works at Phoenixville, Pa., as noted in the July 5 issue of IRON TRADE REVIEW, succeeds his father, grandfather and great-grandfather in this office. Mr. Reeves now is the active head of a family which has been prominently identified with the manufacture of iron and steel in eastern Pennsylvania and New Jersey for more than 100 years. He became connected with the Phoenix Iron Co. in 1904 after graduating from Yale university. He spent two years in the various departments of the plant at Phoenixville and then went to the company's Philadelphia office. He occupied the position of purchasing agent for a number of years and was made vice president in 1917. In 1918 he left the Phoenix Iron Co. to serve in the artillery of the United States army and resumed his connection with the Phoenix company in 1919. In addition to his activity with the Phoenix company, Mr. Reeves has been president of the Little Schuylkill Railroad, Navigation & Coal Co., a subsidiary of the Philadelphia & Reading railway since 1917. He also is a director of the Cambria Iron Co.

J. B. Hill has been placed in charge of the Detroit district sales office of

CHARLES S. BOARDMAN

Williams, White & Co., Moline, Ill., in the sale of machinery. He succeeds d'Ugglas deceased.

H. J. Perkins recently was appointed works manager of the Niagara Falls Smelting & Refining Corp., Buffalo.

G. A. Davis has been appointed manager of the Los Angeles office of Eccles & Smith, Los Angeles.

H. J. Bradley has been appointed manager of the San Francisco office of the Chicago Pneumatic Tool Co., New York.

Walter C. Reed has been appointed general manager of the Pittsfield Machine & Tool Co., Pittsfield, Mass., to succeed H. R. Lanning, resigned.

J. Leonard Replogle, president of the Replogle Steel Co., New York, on July 3 sailed on the AQUITANIA for a European trip.

Herbert Edge, president of Topping Bros., New York, has been elected a director of the Cumberland Coal & Iron Co.

Percival Johnson, president of the Pulaski Iron Co., Philadelphia, on July 10 sailed on the MAURETANIA for a six weeks European trip.

Charles O. Hadly, general manager of sales for the Alan Wood Iron & Steel Co., Conshohocken, Pa., recently returned from a six-week visit on the Pacific Coast.

Matthew Mann, Cortland, N. Y., is to be manager, and Rudolph J. Hein of the Maxf Grinding Wheel Corp., Chester, Mass., office manager, of the reorganized Vitrified Wheel Co., Westfield, Mass.

Kavanaugh C. Downey, formerly treasurer of the Downey Heating & Supply Co., Milwaukee now is associated with the Northwestern Casualty & Surety Co., Milwaukee, and Blatz Kasten & Co., Milwaukee.

William Best Jr. has been appointed district sales manager on the Pacific Coast for the Falcon Tin Plate Co. and the Falcon Steel Co., Niles, O., which recently opened offices in the Sharon building, San Francisco.

H. A. Morlock has been appointed representative for Phillips Isham, New York, and will represent Mr. Isham in the sale of pig iron, coke and alloys in the Philadelphia district. Mr. Morlock for some years was connected with Shimer & Co., Philadelphia.

Paul J. Lavery has been made secretary and assistant treasurer of the Pennsylvania Tank Car Co., Sharon, Pa. succeeding G. W. Johnson, resigned. Mr. Johnson now is assistant secretary of the American Republics Corp., New York.

W. J. Lelghner has been appointed works manager of the George Cutter Co., South Bend, Ind., subsidiary of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. He has been continuously employed by the Westinghouse company since 1903.

C. A. G. Weymouth, for 13 years connected with the Pacific Coast Steel Co. in a sales capacity and for the past few years manager of the company's

transmission tower department, recently resigned to become associated with Edward L. Soule Co., Rialto building, San Francisco iron and steel jobber.

Everett W. Frazar head of Frazar & Co., New York, and associated companies, who has been visiting the New York company for the past month, sailed for England on the LEVIATHAN July 4. He will visit the Paris and Zurich offices of the company, returning to Japan, via New York in the fall.

C. S. Siebert, formerly in the sales department of the Superior Sheet Steel Co., Canton, O., has resigned to become affiliated with Waldo, Egbert & McClain, Inc., Marine Trust building, Buffalo. Mr. Siebert is a son of W. P. Siebert, assistant general manager of sales for the Carnegie Steel Co., Pittsburgh.

Bruno V. Nordberg, president of the Nordberg Mfg. company, Milwaukee, recently received an honorary degree of doctor of engineering, from the University of Michigan. Mr. Nordberg has been ill and was unable to attend the commencement exercises at which the degree was to be conferred upon him in person.

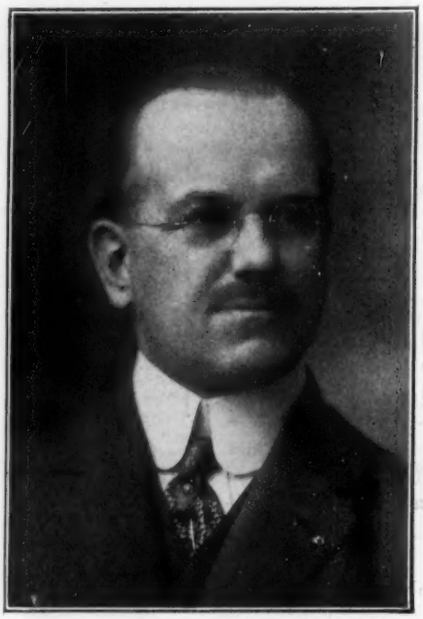
L. R. Louis, effective July 2, resigned as vice president and sales manager of the Cleveland Cap Screw Co., Cleveland, which formerly was known as the F. P. Screw Co. Previous to his association with the Cleveland Cap Screw Co., Mr. Louis was assistant sales manager of the Foster Bolt & Nut Mfg. Co., Cleveland.

T. E. Geiger, formerly connected with the Hobart Bros. Co., Troy, O., has been placed in charge of management of the low voltage division of the Ideal Electric & Mfg. Co., Mansfield, O. Mr. Geiger, for several years, was factory manager of the Troy Wagon Works, Troy O. He is a graduate of the University of Michigan.

Dr. C. H. Desch, the head of the metallurgical department of Sheffield university, Sheffield, England, has been elected a fellow of the Royal society in recognition of his work in metallurgy and applied chemistry. Dr. Desch, who succeeded Dr. J. O. Arnold three years ago as dean of metallurgy, was born in London in 1874 and after acting as research assistant at King's college, London, became lecturer at the University of Glasgow and subsequently professor of metallurgy at the Royal Technical college.

James A. Irwin, following 38 years of active service in the iron and steel industry, recently retired to take up his residence in southern California. In 1885 Mr. Irwin entered the employ of Miller, Metcalf & Parkin, Pittsburgh. Later he was connected with the Crescent Steel Co., a subsidiary of the Crucible Steel Co. of America, Pittsburgh, where he served in various sales capacities. For the past 12 years he has been part owner and eastern representative of the Pittsburgh Tool Steel Wire Co., Monaca, Pa.

William J. Wooldridge recently was appointed manager of the electrical sheet department of the Mansfield Sheet & Tin Plate Co., Mansfield, O. Prior to his appointment, Mr. Wooldridge for about four years was connected in the same capacity with the Whitaker-Glessner Co., Portsmouth, O., resigning there in May. For more than 25 years he was electrical engineer with the General Electric Co., Schenectady, N. Y., during which time he specialized on electrical sheet steel problems. He is a member of the American Iron and Steel institute, the American Institute of Electrical Engineers, the American Electro-Chemical society, the American Institute of Mining and Metallurgical Engineers and the Iron and Steel institute.



WILLIAM J. WOOLDRIDGE

J. W. Spensley, for a number of years eastern representative of the Champion Crane & Engineering Co., Kenton, O., with offices in New York, has resigned to devote more time to the sale of industrial and domestic oil burners for the Brooklyn Oil Burner Co., Brooklyn, of which he was an organizer. As noted recently, he will be succeeded by Vrabek & Kessler, who will continue to maintain offices in the Singer building, 149 Broadway. Mr. Spensley was associated with the crane industry for more than 25 years, being early affiliated with the American Hoist & Derrick Co., St. Paul.

Harold C. Jones, a vice president of the Inland Steel Co., Chicago, has resigned his position and will devote his time to other interests which he has been developing during the past few years.

James C. Bennett, comptroller of the Westinghouse Electric & Mfg. Co., East Pittsburgh, was elected to the board of directors ta a meeting held recently. He takes the place of the late John R. McCune. E. M. Herr, president of the electric company; Edwin Atkins of Atkins & Co., Boston, Mass.; and Samuel M. Vauclain, president of the Baldwin Locomotive Works, Philadelphia, all were re-elected. Mr. Bennett came with the Westinghouse company in 1886 and has been actively engaged in executive work since. In 1909 the office of comptroller was created for him and in 1911 he was made secretary of the company.

Charles C. Gibson, for many years vice president and secretary of the Mullins Body Corp., Salem, O., has been elected president of the company to succeed W. H. Mullins, who is resigning from active leadership of the business. Mr. Mullins will continue as chairman of the board of directors. Frederick P. Mullins, succeeds Mr. Gibson as vice president and secretary of the company.

George E. Waller, who has been office manager of the Wilson Foundry & Machine Co., Pontiac, Mich., has been appointed secretary of the company to succeed Earl MacKenzie, resigned.

Dr. A. S. McAllister, engineer physicist, bureau of standards, who during the past two years has been liaison officer of the bureau and the federal specifications board, assigned to the headquarters of the American Engineering Standards committee, New York, has been recalled to Washington for special work, by Secretary Hoover of the department of commerce. Dr. D. R. Harper 3rd, physicist of the bureau of standards, has been assigned to the American Engineering Standards committee succeeding Dr. McAllister. Dr. Harper is a graduate and former instructor of the University of Pennsylvania, and has been associated with the bureau of standards since 1909. He has specialized in thermometry and heat measurements, particularly in heat transmission and in internal combustion engine physics. Dr. Harper will be concerned with those standardization projects in which the bureau of standards and the federal specifications board are cooperating with the American Engineering Standards committee.

Iron Ore Shipped Direct to Ford Furnaces

Detroit, July 10.—After several years of work the River Rouge from its mouth at the Detroit river to a point one-half mile above the Ford Motor Co.'s tractor plant, has been opened to steamship traffic. Preparations are being made by officials of the Ford company to handle 2,000,000 tons of iron ore direct by lake vessels to the company's furnaces this season.

The River Rouge has been widened and deepened for more than three miles at the instigation of Mr. Ford, who spent several million dollars in purchasing land from adjoining property owners and for dredging a large turning basin in the rear of his River Rouge plant. The government appropriated nearly $750,000 for dredging and widening the river.

Refuses To Extend Time for Thawing Ore

Washington, July 10—The present allowance by eastern railroads of 96 hours free time for thawing frozen iron ore is reasonable and warrants no extension, the interstate commerce commission has ruled in the complaint of the Cambria Steel Co., Midvale Steel & Ordnance Co., Alan Wood Iron & Steel Co., E. & G. Brooke Iron Co. and Birdsboro Steel Foundry & Machine Co. against the Pennsylvania and other eastern railroads. The commission also has ruled that the demurrage rules in effect during December, 1916, January and December, 1917,, and January, 1918, were reasonable.

The complaint arose from the frozen ore difficulties of the winters of 1916-17 and 1917-18, the iron and steel interests contending that the extraordinarily cold weather and railroad conditions were to blame. The trouble factor, the complainants alleged, was the number of cars in transit due to the slow movement by the railroads prior to the freezing weather. The complainants declared that "the situation was beyond their control and that the fair and proper application of the rule in effect is to treat the individual cars awaiting their turn at the thawing stations as being on constructive placement and constructively under the thawing process and hence entitled to exemption from demurrage."

All Bar Extras Higher

(*Continued from Page 90*)

not be less than 40c, whereas the minimum before was 30c.

The extras for machine straightening will be furnished on application; in the old list this extra was a flat 10c per pound.

Quantity differentials have been increased from 15c to 20c, on quantities less than 2000 pounds but not less than 1000 pounds, and from 35c to 50c on quantities less than 1000 pounds.

Differentials for quantity cutting have been added as follows: Less than 2000 pounds to 1500 pounds, 10c; less than 1500 pounds to 1000 pounds, 20c; less than 1000 to 500 pounds, 40c and less than 500 pounds 60c.

The hours of shopmen on the Delaware, Lackawanna & Western railroad at Carbondale, Pa., have been reduced from 10 to 8.

Steel Companies Unite

Washington, July 10.—Early this year the Union Steel Corp., at Vereeniging, and the South African Iron & Steel Corp., Ltd., agreed to a provisional amalgamation, and now they are uniting with the New Castle Iron & Steel Co., at Natal, to obtain the bounty of 15 shillings per ton on pig iron and an extra 15 shillings per ton on steel produced from native ores. This report has been cabled to the department of commerce by Trade Commissioner Stevenson at Johannesburgh.

Obituaries

WILLARD PENNOCK, inventor and designer of the first steel passenger and railway freight cars, died July 7 at his home in Minerva, O., following a sudden heart attack. He was 70 years old and throughout his life had been actively interested in numerous manufacturing and business enterprises. In 1873 Mr. Pennock with his brother, Isaac N. Pennock, Cleveland, formed a partnership to engage in the manufacture of farm implements at Minerva. Several years later the brothers started the building of steel railway cars, Mr. Pennock supervising the technical end of the business, while his brother assumed the management. In 1888 the design of the steel car was perfected and some time later its manufacture was taken over by the Pressed Steel Car Co., Pittsburgh. Andrew Carnegie was one of the first to recognize the utility of the steel cars in industry and had some dealings with Mr. Pennock. Mr. Pennock at one time was president of the Canton Steel Foundry Co., Canton, O., and was interested in various other Canton industries. At one time he was president of the Minerva Mfg. Co. and several years ago sold the Canton Steel Foundry Co., Canton, O., of which he was chief owner, to the Morgan Engineering Co., Alliance. He also was president of the Minerva Savings & Trust Co. and was interested in Cleveland banks.

Clinton H. Meneely, president of the Meneely Bell Co., Troy, N. Y., died at his home there recently. He was 86 years old.

Francis C. Hersey, president of the Hersey Mfg. Co., South Boston, Mass., builder of machinery, died at his summer home at Kennebunk Beach, Me., July 1, aged 80 years.

Samuel Van Camp, vice president of the Van Camp Hardware & Iron Co., Indianapolis, died July 5 at a hospital in New York where he had been taken from the AQUITANIA, after having been taken ill while returning from Europe.

Thomas J. Keating, who for a number of years was president of the Ohlen Saw Mfg. Co., Columbus, O., died July 4, at his home in Columbus, following an illness of several years. He was 74 years old. While he was active in business and manufacturing circles, Mr. Keating was best known as an attorney.

James F. Bourquin, vice president and general manager of the Continental Motors Corp., Muskegon, Mich., died at his home there recently. He was active in organizing the Liberty Motor Car Co., Detroit, and contributed largely to the development of the Paige Motors Car Co., Detroit. He was 45 years old.

Wesley R. Johnson, chief engineer of the Colt's Patent Fire Arms Mfg. Co., and Albert E. Coleman, for many years plant manager for the Pratt & Whitney Co., both of Hartford, Conn, were killed in an automobile accident in East Windsor, Conn., July 2. Mr. Johnson was 49 years old and lived in Meridan, Conn. Mr. Coleman was 45 years old and was secretary of the R. G. Bent Co., Hartford, general contractor.

Pledged To Abolish 12-Hour Day

American Iron and Steel Institute Directors Give Assurance to President Harding Change Will Be Made "As Soon As There Is Sufficient Labor to Permit It"—"Wonderful Achievement," Says Judge Gary

NEW YORK, July 10—"I can not say exactly when the United States Steel Corp. or any other company will get rid of the 12-hour day entirely, but I can positively state that they will begin to act in that direction very soon and be very diligent in their efforts."

This assurance was given by E. H. Gary, chairman of the Steel corporation last Friday to newspaper men who interviewed him about his correspondence with President Harding on the subject of the 12-hour day. Judge Gary spoke not only as chairman of the Steel corporation, but as president of the American Iron and Steel institute.

On receiving a letter from President Harding dated June 18, pertaining to the 12-hour day, Judge Gary sent a reply dated June 20, stating that he would call a meeting of the institute directors June 25 to consider the President's communication. He assured the President that the subject matter of the letter of June 18 would be given every consideration. Judge Gary mentioned this letter to show that there was no delay on his part in responding to the President.

In his statement to the reporters, Judge Gary made it clear that his assurances to the President to do away with the 12-hour day was entirely consistent with everything that he had said in the past. He pointed out that the steel industry has recognized the growing public sentiment against the 12-hour day. At the same time he pointed out that he has been opposed to the 12-hour day, personally, and that the long working term was established by the workmen themselves.

"The 12-hour day in the steel industry," said Judge Gary, "was started by the men long before the United States Steel Corp. was organized. I do not believe the 12-hour day in the steel industry could have heretofore been entirely abolished by consent of all, or substantially all, of the employers in that industry. Certain it is that several and perhaps many of the employers, from the time of the Presidents' dinner in May, 1922, have been using every reasonable effort to eliminate the 12-hour day. And now that within 14 months practically all of the manufacturers of iron and steel in this country have positively agreed to the entire abolition of the 12-hour day so soon as there is sufficient labor to permit it, I think, we may say, it is a wonderful achievement.

"Just when the 12-hour day will be substantially, and I hope entirely eliminated in the steel industry, cannot be now stated with certainty. But it can be said that efforts to get rid of the 12-hour day will be very promptly made and that good progress will result and perfect success reached within a comparatively short time, provided the increases in the number of workmen which now seem apparent continue."

President's Letter to Gary

President Harding's letter, addressed to Judge Gary on June 18 stated:

" I am impressed that in the reasoning of the (institute committee's) report great weight should be attached to the fact that in the present shortage of labor it would cripple our entire prosperity if the change were abruptly made. In the hope that this question could be disposed of I am wondering if it would not be possible for the steel industry to consider giving an undertaking that before there shall be any reduction in the staff of employes of the industry through any recession of demand for steel products or at any time when there is a surplus of labor available, that then the change should be made from the two shifts to the three shift basis.

" I cannot but believe that such an undertaking would give great satisfaction to the American people as a whole and would indeed establish pride and confidence in the ability of our industries themselves to solve matters which are so conclusively advocated by the public."

The reply to the President's letter was as follows:

New York, June 27, 1923.

To Honorable Warren G. Harding, President of the United States.

Dear Mr. President: Careful consideration has been given to your letter of June 18 by the undersigned directors of the American Iron & Steel Institute, comprising all of those whose attendance could be secured at this time.

Undoubtedly there is a strong sentiment throughout the country in favor of eliminating the 12-hour day and this we do not under-estimate. On account of this sentiment and especially because it is in accordance with your own expressed views, we are determined to exert every effort at our command to secure in the iron and steel industry of this country a total abolition of the 12-hour day at the earliest time practicable.

This means the employment of large numbers of workman on an 8-hour basis and all others on a basis of ten hours or less without an unjustifiable interruption to operations.

The change cannot be effected over night. It will involve many adjustments, some of them complicated and difficult but we think it can be brought about very when as you state, "there is a surplus of labor available."

The iron and steel manufacturers generally of the United States outside of the directors referred to are expected to concur in the conclusion reached by the directors as above stated.

With highest regards we are, Cordially yours,

Elbert H. Gary, John A. Topping, W. A. Rogers, W. H. Donner, W. J. Filbert, E. A. S. Clarke, James A. Farrell, E. G. Grace, Willis L. King, James A. Burden, L. E. Black, Severn P. Ker, J. A. Campbell, A. C. Dinkey, Charles M. Schawb.

Directors, American Iron & Steel Institute.

After receiving the reply from the directors of the institute, President Harding in a speech at Tacoma, Wash., said:

"I wish to congratulate the steel industry on this important step. It will heal a sore in American industrial life which has been the cause of infinite struggle and bitterness for over a generation, and it marks an accomplishment from the conscience of industry itself, a recognition of responsibility from employer to employe, that gives us faith in rightful solutions of the many tangled problems that are the concomitant of the rapid growth of America. It is an example that I trust the few other continuous processes in industry which still maintain the 12-hour shift may rapidly follow. I should be proud indeed if my administration were marked by the final passing of the 12-hour working day in American life."

On Sympathy Strike

Toronto, Ont., July 9.—Eight thousand coal miners employed in the Cape Breton mines of the British Empire Steel Corp., have gone on strike in sympathy with the striking steelworkers. Troops recently were sent to maintain order and protect the property of the corporation. The miners demanded the withdrawal of the soldiers, but this was refused. The steel and coal departments of the corporation have been tied up. At last accounts, there had been no further rioting and everything was quiet.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

CAPITALIZED at $250,000 the Federal Mfg. Co., Holland, Mich., which recently was incorporated, has succeeded to the business of the Federal Stamping Co. It has purchased 17 acres in the east part of Holland on which now is being constructed a spur track 1100 feet long. Alongside of this a 1-story factory building, 180 x 300 feet, is to be erected, which will be equipped with modern machinery for the production on a large scale of the company's line of furnace accessories, consisting of regulator sets, etc. In addition to press equipment the company plans to enlarge materially its tool room equipment and will install a much larger plating room and add a japanning department, which will require overhead trolley equipment. Thomas Olinger is treasurer and general manager of the company.

* * *

THE PIONEER PRODUCTS CO., Dayton, O., recently purchased the plant of the Bookwalter Wheel Co. at Miamisburg, O. It is understood new buildings will be erected at the plant and a quantity of new machinery and equipment installed. Complete plans of the Pioneer company have not been announced.

* * *

ADVICES have been received from the Leonard Range Co., Washington, Ind., to the effect it will erect a 1-story and basement factory building, 69 x 305 feet, to be of brick and steel construction. It has the necessary equipment for the plant with the exception of that for the nickeling department, which it will purchase.

* * *

THE Saginaw Pattern Works, Saginaw, Mich., has been organized to make patterns for brass and aluminum castings by Albert J. Fox, formerly superintendent of the pattern department of the Buick Motor Car Co. and C. C. Wood, who formerly was connected with the Central Foundry of Saginaw.

* * *

OFFICERS were elected at the recent meeting of the board of directors of the Howell Electric Motors Co., Howell, Mich. They are: President and treasurer, W. M. Spencer; vice president, R. B. McPherson; vice president and general manager, C. F. Norton and secretary and assistant treasurer, H. T. Proctor.

* * *

THE Montreal Mining Co., Hurley, Wis., is erecting a "dry house" at a cost of $75,000 which is designed as one of the most complete and best-equipped buildings of its kind. The Montreal mine is a hematite field and miners have unusual problems of cleanliness. The new dry house is located 100 feet from the shaft mouth and entrance is through a subway to be heated in winter.

* * *

ABOUT $75,000 will be spent by the Lipman Refrigerator Car Mfg. Co., Beloit, Wis., in enlarging its main works in South Beloit to further concentrate production. At present the machine shop is situated several miles away, in Beloit. A new machine shop, 80 x 260 feet, will be built at once, the contract having been let July 6 to A. C. Woods of Rockford, Ill.

* * *

DALLAS E. WINSLOW has purchased the property of the W. A. Paterson Co., Detroit, manufacturer of automobiles and he will continue to operate the plant. E. C. Kollmargen, for the past nine years chief engineer and production manager of the company, will be factory manager and will have charge of production and engineering. W. S. Paterson, president, and W. R. Hubbard, secretary-treasurer, have disposed of their holdings in the organization. It is understood a plan of expansion will be launched as soon as details of the transfer are completed.

* * *

THROUGH C. C. McKallip & Co., the Pittsburgh Malleable Iron Co. has bought the former Wainwright brewery of the Pittsburgh Brewing Co. in Lawrenceville. The property fronts 95 feet in Thirty-sixth street by 333 feet in depth along Charlotte and Smallman streets. It is improved with several warehouses. The Pittsburgh Malleable Iron Co., after making extensive alterations and erecting some new buildings will occupy the premises. This company's plant adjoins the former brewery site on the west, occupying the balance of the block toward Thirty-fifth street.

* * *

DONNELLY & CO., Philadelphia, within the next 60 to 90 days will be forced to move from its present quarters at 531-33-35 North Fourth street. This is due to the fact the city of Philadelphia has taken over part of the firm's present building and will utilize the site for a street extension. The company has secured new quarters at 468-70-72 York avenue, which will be modern in every respect.

* * *

AN OPTION to purchase the Acme Brass & Metal Works of Waupaca, Wis., has been given a large Chicago concern engaged in the automobile accessory business. Stockholders in the Waupaca company are to retain an interest by taking stock in the purchasing concern. The Acme works were formed about 18 months ago by the purchasers of the assets of the bankrupt Jorgenson Mfg. Co., which had just made a heavy investment in new brass furnaces and shop tools to increase its output of gas engine priming devices and other automobile parts and accessories. Since the Acme company took hold, operations have been of small volume.

* * *

THE Brightman Bros Co., Columbus, O., which recently was incorporated with $250,000 capital stock, has purchased 11½ acres in South Columbus, and has let contracts for the erection of factory buildings and the purchase of equipment. It expects to be in operation within 90 days. The company will manufacture hexagon steel bar nuts, shafting machinery and straightening machinery and later on additional buildings will be erected to be devoted to the manufacture of turned and drawn shafting, screw stock and cold-drawn products. Officers of the company are: President, C. W. Brightman; vice president and treasurer, G. F. Brightman; vice president, H. M. Brightman; secretary, H. L. Brightman and assistant secretary, T. L. Brightman.

Machine Tool Buying Is Light

Sales Are Confined Chiefly to Small Lots—Number of Inquiries Is Coming from Railroads—Used Machinery Market Continues To Realize Good Turnover—Prospects Bright for Business Increase in September

SALES of machine tools and shop equipment during the past week have shown a slight falling off from those of the preceding week, due in part to the one-day holiday. Reports from various centers throughout the country indicate that the seasonal summer slump is affecting practically all districts. Several centers report that buyers continue to defer buying, and are bringing pressure to bear to secure lower prices.

Both dealers and builders agree that prospects are bright for a substantial increase in business in September. This is based not only on the potential business indicated by inquiries now being brought out, but also on the belief that the railroads will be in the market for new equipment and that automobile manufacturers will need to replace a considerable quantity of machinery.

A number of inquiries are current from railroads. The Pennsylvania railroad is seeking equipment for its Columbus shops. Other railroads inquiring for machinery include the Virginian, the Seaboard Air Line, the Baltimore & Ohio, and the Atlantic Coast Line. During the week sales were closed with the Southern Pacific, Union Pacific, the Denver & Rio Grande Western and the Glenn Alden Coal Co., a subsidiary of the Lehigh Valley railroad. The Norfolk & Western and the Central of New Jersey have not closed on their recent inquiries.

Among the other buyers of equipment during the past week are the Standard Seamless Tube Co., Pittsburgh, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., Pittsburgh Steel Products Co., Allenport, Pa., Standard Oil Co. of New York, the American Thread Co., New York, the Gagurin Engraving Works, New York, the Garfield Mfg. Co., New York, Pacific Car & Foundry Co., Portland, Ore.

In the used machinery market inquiries are being brought out in good numbers and the total sales constitute a satisfactory volume. It is understood that the Shenango Furnace Co. Pittsburgh has purchased in this market. Sales are reported for a number of small items, consisting of drill presses, grinders, radial drills, high speed lathes, boring bills, etc. Dealers believe that this market will continue to do a fair volume of business during the months of July and August.

Inquiries for cranes are not exceptionally numerous, and sales are rather quiet. The principal business is being done with the railroads and steel companies.

Numerous Inquiries Brought Out for Small Lots

NEW YORK, July 10.—Although no sizable lists are involved, a fair sprinkling of inquiry for machine tools is being issued by eastern railroads. The Pennsylvania railroad, in addition to the two turret lathes noted sometime ago for the eastern zone, is also now inquiring for a 36-inch punch, a 36-inch shear, a 5-foot radial drill and a 4-foot radial drill. The Virginian railway is inquiring for a 32-inch shaper, a pipe machine, a sensitive drill press, a 32-inch crank planer, and 21 and 25-inch lathes. The Seaboard Air Line is asking for a 36-inch and a 60-inch punch and a 36-inch and 60-inch shear.

Other railroad demand includes a 300-ton hydraulic bulldozer for the Atlantic Coast Line, and one 40-inch tire turning lathe and an alligator shear for the Baltimore & Ohio. Few orders, however, have been placed by the railroads in this district of late. The large list of the Norfolk & Western has not as yet been acted upon, and the second list of the Central Railroad of New Jersey, recently issued, is still pending.

Included in miscellaneous buying are three 600-pound steam hammers for the Glenn Alden Coal Co., subsidiary of the Lehigh Valley railroad; a 1500-pound hammer for the Union Pacific; a 30-inch lathe and a 30-inch planer for the Standard Oil Co. of New York, the latter machine going to Venezuela; a 14-inch engine lathe for the American Thread Co., this city, and a universal grinder for the Gagurin Engraving Works, also this city. A few machines have been purchased recently by the Garfield Mfg. Co.

Crane buying of the past week has been the slowest in sometime, a few scattered orders being noted.

Market Shows Better Tone

CLEVELAND, July 10.—Slightly better conditions are reported in the machine tool market in this district during the past week. Although the industry is passing through the seasonal slump usually found during July and August, several dealers report a satisfactory volume of sales during the past week. Sales, for the most part, consist of a small number of tools. Purchases have been made chiefly by manufacturers, railroad buying remaining quiet in this territory. Inquiries for small lists continue to be brought out from time to time. Judging from statements made by manufacturers concerning orders to be placed later in the year, dealers feel that the potential market is good, and that the first of September will see sales greatly increased.

The rate at which tool builders are running plants depends on the number of back orders yet to be filled. One builder reports that orders have fallen off about 50 per cent over the rate for the first week in June, and that the plant is operating at 40 per cent capacity. Another reports that orders are slow in coming in, but back orders are keeping the plant running at 85 per cent capacity. It is the belief in this district that the railroads will be in the market for much equipment in the fall, and that while the automotive industry is not expected to buy much new machinery, still the rapid rate of production that has been maintained recently will necessitate the replacement of a considerable amount of equipment. Sales last week included a rotary milling machine for a Detroit manufacturer and a large gate shear for a Cleveland steel producer.

Dealers in the second-hand machinery market report a slight falling off in both sales and inquiries over the preceding week. As an average, June business about equaled the total for the month of May. The Koehring Co., Milwaukee, is inquiring for a list composed of from 8 to 10 machines. Sales include two nut tapping machines to an Ohio manufacturer and two drill presses to a northern Indiana company. A local dealer has purchased

the equipment of an Erie, Pa., plant.

Both sales and inquiries in the crane market are good. Railroads and steel mills are the principal buyers. The outstanding feature is the desire to obtain labor saving equipment.

New England Market Slumps

BOSTON, July 10.—Between the holiday and the seasonal contraction in business, the machinery market has been flat. There is no tendency to shade prices. On the whole dealers are inclined to expect higher prices on the ground that labor costs show no signs of receding. Railroad buying, which has been a feature in other sections of the country, is entirely absent as a factor in the New England market. The railroads here are expending larger sums for maintenance, but officials of the roads admit that they are not spending anything like what is needed on new machinery. Some small school lists are anticipated, but nothing has developed as yet.

Aside from the usual run of small material the only sales of importance comprise two engine lathes to a large textile machinery manufacturer, one 16-inch and one 20-inch. The sale of two power squaring shears is noted, one a quarter inch and the other a light gage. No inquiries have developed during the week.

Demand Well Maintained

TORONTO, Ont., July 9.—The demand for practically all lines of machine tools is active and while orders closed during the past week were slightly below those of a week or two previous, both dealers and builders are well supplied with orders. The latter are busy and the majority are operating from 80 to 100 per cent capacity.

The automotive industry is experiencing one of the best years in its history in so far as production and car sales are concerned and as a result plant equipment and tools for this work are in big demand. In the small tool field the demand is being maintained, with a good volume of orders making their appearance both for present and future delivery. The prospective demand for tools and equipment is causing a general spirit of optimism to prevail among both dealers and builders.

Coast Demand Quiet

SAN FRANCISCO, July 7.—Demand for machine tools and equipment in the local market during the past month was not as heavy as in May, but dealers attribute the lessened demand to the season of the year. There has been some hesitancy on the part of a few buyers in placing new business on account of the higher prices but these cases are in the minority. Sales continue for the most part to involve single tools, but some rather heavy equipment has been sold recently. Due to the cutting down of production in the oil fields few inquiries are before the trade for oil country equipment.

The Southern Pacific Co. placed a 90-inch heavy duty driving wheel lathe and a 90-inch quartering machine with the Pratt & Whitney Co. and a forging machine with Louis J. Henes, this equipment to be used in its Bay Shore shops. The Pratt & Whitney Co. also sold a 84-inch hydraulic wheel press to the Long Bell Lumber Co., a 600-pound steam hammer to the Utah Fuel Co., Salt Lake City, Utah; a 1500-pound steam hammer to the Pan American Oil Co.; an axle lathe to the Pacific Car & Foundry Co., Portland, and a 53-inch boring mill to the Northwest Link-Belt Co., Seattle. Smith-Booth-Usher Co. secured an order for a 24-inch lathe for the United States Marine Corps. Berger & Carter Co. report the sale of a 22-inch motor driven drill press to the Sugar Pine Lumber Co., a 14-inch lathe to the Union Construction Co. and four automatic lathes to the Marchant Calculating Machine Co., Emeryville.

New crane inquiries have been exceptionally slow in coming fourth lately and only one pending sale is reported. However, crane men state that prospects are good and that a fair amount of new business should come to hand shortly.

Holiday Cuts Sales

PITTSBURGH, July 10.—The machine tool and equipment trade suffered this past week on account of the holiday. The buying rate was considerably lower than the preceding week or two although orders are coming along at a fair rate and some projects deferred for some time are to be brought to the closing stage during this present week. Buyers continue to bring pressure to bear for lower prices, which is hampering the sale of new equipment. The Westinghouse Electric & Mfg. Co. has continued its purchases on its list for Sharon, Pa. transformer plant, distributing several orders among different dealers here and in Cincinnati. The Pitts-

Crane Awards and Inquiries of the Week

Orders Placed

One 25-ton locomotive crane for the Donora works of the American Steel & Wire Co., and one 25-ton industrial crane for the central furnaces of the American Steel & Wire Co. to the Industrial Works, Bay City, Mich., through Ridenour, Seaver & Kendig, Cleveland.

One 5-ton crane with 29-foot span, ordered through the Pittsburgh Crane & Engineering Co., from Alfred Box & Co., Philadelphia, by the Reliance Steel Casting Co., Pittsburgh.

One 5-ton, 3-motor, mill-type crane with 115-foot span, and one 10-ton, 4-motor mill-type crane with 85-foot span, ordered through the Pittsburgh office of the Cleveland Crane & Engineering Co., Wickliffe, O., by the Pittsburgh Steel Products Co., Allenport, Pa.

One 3-ton crane for the impregnating room of the Sharon, Pa., transformer plant of the Westinghouse Electric & Mfg. Co., from the Alliance Machine Co., Alliance, O.

One 30-ton overhead crane for the United Comstock Mines to the Cyclops Iron Works.

One 10-ton handpower crane for the Hetch Hetchy project to the Cyclops Iron Works.

One 10-ton gantry, full electric, crane for the Coos Bay Lumber Co., to the Cyclops Iron Works.

Two 125-ton electric cranes, each with span of 122 feet, for the Commonwealth Edison Co., Chicago, the business being placed through Sargent Lundey, with the Whiting Corp.

One 40-ton and one 20-ton overhead crane for the Southern Pacific Co.'s Bay Shore shops to Pratt & Whitney Co.

Two 15-ton and one 10-ton overhead crane for the Metal & Thermit Corp.'s South San Francisco plant to Cyclops Iron Works.

One 50-ton with 10-ton auxiliary hoist for the city of Pasadena, Cal., to Western Manning, Maxwell & Moore Co.

One 15-ton traveling crane for Puget Sound navy yard to Manning, Maxwell & Moore Co.

One 10-ton second hand traveling crane for Parr terminal Co., Oakland, Cal., to unknown dealer.

One 2-ton hoist for the Standard Underground Cable Co., Perth Amboy, N. J., to the Shepard Electric Crane & Hoist Co.

One 75-ton electric overhead crane, 42-foot 6-inch span, for the Portland Railway, Light Power Co., Portland, Oreg., to the Whiting Corp.

One 5-ton electric crane, 72-foot, 6-inch span, for the Banner Iron Works, to the Whiting Corp.

Two ditchers for the New York, New Haven & Hartford, to the American Hoist & Derrick Co.

One ditcher for the Philadelphia & Reading railroad to the American Hoist & Derrick Co.

One 10-ton, 1-motor crane, 29-foot span for the Scranton Lace Co., Scranton, Pa., to the Euclid Crane & Hoist Co.

One 20-ton locomotive crane for the Chesapeake & Ohio railroad to the Browning Co.

Orders Pending

Two 10-ton cranes wanted by a manufacturer in the Pittsburgh district; bids being taken.

Four cranes, 5 to 15-ton capacity wanted by a manufacturer in the Pittsburgh district; bids being taken.

Two 15-ton cranes, double-drum type, for the Railway Steel Spring Co., Latrobe, Pa.; bids being taken.

One 3-ton crane for the blacksmith shop at Sharon, Pa., transformer plant of the Westinghouse Electric & Mfg. Co., bids being tabulated.

One I-beam hoist for the Pennsylvania railroad, Dennison, O.; bids being tabulated.

Two locomotive cranes for the Carnegie Steel Co., Mingo Junction and Bellaire, O.; action still deferred.

One 20-ton locomotive crane for the McCleary Timber Co. of Oregon, bids through Stewart Machinery Co. of Portland, Oreg.

One 25-ton overhead crane for the Brooklyn Edison Co., bids asked.

Two 15-ton cranes, 80-foot 6-inch span, for the Latrobe plant of the Railway Steel Spring Co., 30 Church street, New York, bids asked.

burgh Steel Products Co., Allenport, Pa., bought a 30-inch lathe and a small drill press from two different sellers. It also purchased two cranes.

The newest machine tool inquiry current comes from the Pennsylvania railroad for Columbus, O. comprising two planers, one boring mill, one tire trimming lathe and a radial drill. Its lathe purchase for Conway, Pa. shop continues to be held up. The Standard Seamless Tube Co. is understood to have bought a new mill from the Standard Engineering Co., Ellwood City, Pa. The Sharpsville Furnace Co., Sharpsville, Pa., soon will close on a boring mill, lathe, drill press, etc. A formal list is to be issued soon by the Railway Steel Spring Co., Latrobe, Pa., which also is in the market for two cranes.

Good used machinery finds a ready sale, and the Shenango Furnace Co. is understood to have met its needs in this market. Other sales in the used machinery field consist of small machinery items such as drill presses, grinders, a radial drill, a high speed lathe, and a 36-inch heavy duty boring mill, the latter for shipment to the Pacific coast. One new inquiry out for used machinery consists of six or eight items. A nearby steel mill is interested in a 15,000-cubic-foot blower but is considering the purchase of a used blower of 14,770-cubic-foot capacity. The crane market is featured with new inquiries for two and four cranes, respectively, and three sales, one of two cranes and two of one crane each. The Dravo Contracting Co. has been awarded the contract for the Bessemer & Lake Erie dock at Conneaut, O., and probably will supply the needed cranes itself.

Summer Slump Is Felt

CHICAGO, July 10—Dealers in machine tool equipment at Chicago are in the midst of the usual summer dullness. Added to this condition is a general apathy which is attributed by some to the present high level of prices. The situation as to price is far from comfortable, as most consumers consider the present level far above what it should be and for that reason are refraining from buying further. Some color is lent to this opinion by the fact that considerable cutting of prices is being done and this possibly may foreshadow a general reduction.

At the same time some manufacturers of machine tools are considerably behind on delivery, as the railroad buying of 30 to 60 days ago gave some of them fairly heavy order books which have not yet been worked out. Demand for punch presses continues the most active feature of the market and small lots are being sold constantly, while a number are still pending. No further inquiry by railroads has come out recently and no railroad buying has been done in the Chicago market. The Denver & Rio Grande Western railroad is understood to have closed on its inquiry put out several weeks ago, the business being taken by Denver and Salt Lake dealers to the exclusion of Chicago sellers. Other railroads having tool lists under consideration apparently are not yet ready to close.

Current Buying Is Limited

MILWAUKEE, July 10.—Machinery trade has entered the usual midsummer period of inactivity and sales are not being made as freely as earlier this year. Manufacturers are gradually catching up on deliveries. The Ford interests continue to place orders here for various kinds of machinery, and are responsible for some of the milling machine business coming this way. The Nash Motors Co. is buying tools for a substantial addition to its forge shop at Kenosha. The A. O. Smith Corp., Milwaukee, is still buying against a list of automatic machines, presses and other machinery.

Construction and Enterprise

Concise and Timely Business Building Opportunities from the Field of Industry

East of the Mississippi River

NEW HAVEN, CONN.—L. M. Ryman & Sons, Inc., has been incorporated with $25,000 capital stock by L. M. Ryman, G. F. Kreilsheim and L. J. Ryman.

NORWALK, CONN.—The Bennett Wire Co., Water street, plans the erection of a 1-story plant addition.

MIAMI, FLA.—The L. D. Shackleford Motor Co. plans the erection of a machine shop.

TAMPA, FLA.—The Export Chemical Co., capitalized at $2,350,000, plans a large fertilizer plant here.

BELLEVILLE, ILL.—The St. Clair Electrical Engineering Co., 10608 West Main street, has been incorporated with $20,000 capital stock by Joseph A. Troy Jr., Charles McManus and others. It will manufacture and deal in machinery, electrical and radio devices. The company is represented by C. E. Pope and H. F. Driemeyer, 24 North Main street.

CHICAGO—The Chicago Tube & Iron Co. has bought factory property at 2531 West Forty-eighth street.

CHICAGO—The A. & R. Japanning Works, Inc., 939 North Wells street, has been incorporated with $10,000 capital stock by John J. Artingstall, S. G. Artingstall Jr., and R. Artingstall.

CHICAGO—The Midwest Machinery Supply Co., 616, 622 West Lake street, has been incorporated with $15,000 capital stock to manufacture and deal in machinery by Albert Hoffman, F. W. Elliott and K. Wolshen. The company is represented by M. M. Chaikin, 127 North Dearborn street.

CHICAGO—The Pioneer Armature Co., Inc., 2805 Cottage Grove avenue, has been incorporated with $10,000 capital stock to manufacture and deal in armatures, automobiles, etc., by H. T. Doolittle, Walter E. Doolittle and George F. Hughes. The company is represented by Edward A. Biggs, Title & Trust building.

CHICAGO—The Howard & McCullough Laboratories, Inc., 20 East Jackson boulevard, has been incorporated with $5000 capital stock to manufacture and deal in electrical apparatus, etc., by Austin A. Howard, J. J. MacDonald and E. H. Smith. The company is represented by R. R. Howard, 20 East Jackson boulevard.

CLEARING, ILL.—The Murphy McEwen Co., 5051 West Sixty-fifth street, plans the erection of a 1-story factory addition to cost about $50,000.

DECATUR, ILL.—The Guardian Appliance Mfg. Co., 360 East Cerro Gordo street, has been incorporated with 20 shares of no par value stock, to deal in and manufacture metal products, by C. M. Terry, H. H. Shugart and I. W. Rosene. The company is represented by Vail, Pague & Allen, 501 Standard Life building.

DUQUOIN, ILL.—The Duquoin Iron & Supply Co., 214 East Main street, has been incorporated with $25,000 capital stock by Lyle D. Flavoll, W. S. Burris and Clyde H. Justice. The company is represented by W. S. Burns, president of the Jewel Coal & Mining Co., Duquoin.

STERLING, ILL.—The Charter Gas Engine

Co. contemplates the erection of a 1-story factory addition.

ELKHART, IND.—W. L. Huffman plans to establish a plant for the manufacture of axles, etc.

HAMMOND, IND.—The Steel & Tube Co. of America has taken out a permit to erect a small factory building to be built at an estimated cost of $3,000

INDIANAPOLIS—The Indianapolis Pump & Tube Co., Kentucky avenue and Drover street, has started work on the erection of a plant at Greenwood, Ind.

RICHMOND, IND.—The Fibre Conduit Co., Orangeburg, Ky., contemplates the erection of a plant here.

SOUTH BEND, IND.—The George Cutter Mfg. Co. 401 North Notre Dame avenue, plans the erection of a 2-story factory addition.

TERRE HAUTE, IND.—The Smith-Alsop Paint Co. contemplates the erection of a paint manufacturing building.

LOUISVILLE, KY.—The Standard Sanitary Mfg. Co. has awarded a contract for the erection of a foundry and enameling building.

FITCHBURG, MASS.—The Thomas Co., maker of steel horse collars, has let the contract for the erection of a 1-story factory building, 75x87 feet.

QUINCY, MASS.—The Boston Gear Works has let the contract for the erection of a factory building on Holmes street, to be built at an estimated cost of $50,000.

SPRINGFIELD, MASS.—The Connecticut Electric Steel Casting Co., Hartford, Conn., has been incorporated with $87,500 capital stock by Frank M. Livingstone, John W. Sarles, Bridgeport, Conn., Lester D. Dame and others.

WARE, MASS.—The Ware Foundry Co. has let the contract for the rebuilding of its plant recently damaged by fire.

WORCESTER, MASS.—The Graton & Knight Mfg. Co. plans extensions and improvements to cost about $50,000.

BALTIMORE—The American Meter Co., 307-9 East Saratoga street, has awarded a contract for the erection of a plant building, 37x83 feet, to be built at an estimated cost of $75,000.

IRONWOOD, MICH.—Part of the plant of the Scott & Howe Lumber Co. recently was damaged by fire.

KALAMAZOO, MICH.—The C. G. Spring Co. has started work on the erection of two 1-story plant additions, 40x75 feet.

IRVINGTON, N. J.—Plans have been completed by the Vreeland Motor Co., Inc., for an addition, 30 x 140 feet. The building is designed to provide greater assembling space. Some equipment, including a crane, will be purchased, although no early action is expected.

NEWARK, N. J.—A $20,000 shop addition, 1-story high, will be erected here by the Essex Machine Repairing Co.

NEWARK, N. J.—The Ballard Oil Equipment Co. purchased property on the Passaic river for a plant, which will include a 2-story, building, a 3-story power plant and six tanks, of about 100,000 gallons each.

PERTH AMBOY, N. J.—E. Allen Wilson, architect, Philadelphia, recently closed bids on a plant addition to be erected at Perth Amboy.

TRENTON, N. J.—The Crossley Machine Co. plans the erection of a 2-story plant addition.

ANDOVER, N. Y.—E. W. Sanberg plans to establish a plant for the manufacture of commercial automobile bodies.

BROOKYN, N. Y.—The Robert Finlay Mfg. Co., 100 Lexington avenue, manufacturer of lighting fixtures, plans extentions to its 3-story plant to be built at an estimated cost of $25,000.

BROOKLYN, N. Y.—Approximately $600,000 will be expended for a power station by the Brooklyn-Manhattan Transit Corp., which is arranging for a fund of $1,750,000 for equipment and various improvements.

BROOKLYN, N. Y.—The B. & S. Metal Products Corp. has been incorporated with $10,000 capital stock by D. Brown, S. Sigal and W. J. Cunningham. The company is represented by G. S. Levine, 233 Broadway.

BUFFALO—The Erie Sugar Jack Corp., farm and dairy appliances, has been incorporated with $150,000 capital stock by C. S. Donaldson, D. T. Graves and C. R. Mabee. The compny is represented by M. N. Baker.

LITTLE FALLS, N. Y.—The Little Falls Fibre Co. plans the construction of a 2-story factory building, 60x140 feet, to be built at an estimated cost of $175,000.

LONG ISLAND, N. Y.—The Motometer

Industrial Business Changes Recently Announced

HARRON, RICKARD & McCONE, San Francisco, have been appointed agents in California for the Nazel Engineering & Machine Co., Philadelphia; the Blanchard Machine Co., Cambridge, Mass.; the Gidding & Lewis Co., Fon du Lac, Wis.; the Hall & Brown Woodworking Machine Co., St. Louis and the Parks Ball Bearing Machine Co., Cincinnati.

* * *

The Service Steel Co., Detroit, has moved into its new quarters at 1435 Franklin street.

* * *

The Aetna Ball Bearing Mfg. Co. has removed its offices to 2727-2745 High street, Chicago.

* * *

The California Press Mfg. Co., San Francisco, has removed its plant and offices from 409 Sixth street to 1800 Folsom street.

* * *

Herberts Machinery & Supply Co., San Francisco and Los Angles, has been appointed California representative for the Triplex Machine Tool Corp., New York.

* * *

Since July 1 the V. & O. Press Co. has been located in its new plant at Hudson, N. Y. It formerly was located at Glendale, Brooklyn, N. Y.

* * *

Bancroft & Martin Rolling Mills Co., formerly of 141 Milk street, Boston, has removed its office to Everett, Mass. The company operates a rolling mill at Portland, Me.

* * *

Atkinson & Utech, Inc., representatives of the Titusville Forge Co. and other organizations, have moved their offices from 111 to 120 Broadway, New York.

* * *

The Cyclops Steel Co. has removed its New York offices from 120 Broadway to 100 East Forty-second street, Pershing Square building.

* * *

Burns & McDonnell Engineering Co., Kansas City, Mo., municipal engineer, has opened an office in the Marsh-Strong building, Los Angeles.

* * *

The Berger & Carter Co., San Francisco, has been appointed California representative for the Sidney Machine Tool Co., Sidney, O., and the Ohio Machine Tool Co., Kenton, O.

* * *

The Hurlbut, Rogers Machinery Co. now is located at Nashua, N. H., where it has larger facilities. The removal of the company from South Sudbury, Mass., was occasioned through the destruction by fire of its plant in that city.

* * *

The Falcon Steel Co. and the Falcon Tin Plate Co., Niles, O., have established Pacific Coast sales offices in the Sharon building, 55 New Montgomery street, San Francisco, in charge of William Best Jr. This office will handle the sale of the companies' products in California, Oregon and Washington.

Warehouse Steel Prices

Quotations in Cents Per Pound at Leading Market Centers

STEEL BARS

Boston	3.515c
Buffalo	3.55c
Chicago	3.20c
Cincinnati	3.40c to 3.50c
Cleveland	3.36c
Detroit	3.35c
Los Angles	3.85c
New York	3.54c
Philadelphia	3.55c
San Francisco	4.00c
Seattle	4.10c
St. Louis	3.35c
St. Paul	3.45c

IRON BARS

Boston	3.515c
Buffalo	3.50c
Chicago	3.20c
Cincinnati	3.40c to 3.50c
Detroit	3.35c
New York	3.54c
Philadelphia	3.55c
St. Louis	3.35c

SHAPES, STRUCTURAL

Boston	3.615c
Buffalo	3.65c
Chicago	3.30c
Cincinnati	3.50c to 3.60c
Cleveland	3.46c
Detroit	3.45c
Los Angles	3.95c
New York	3.64c
Philadelphia	3.65c
San Francisco	4.10c
Seattle (large shapes)	4.20c
St. Louis	3.45c
St. Paul	3.55c

PLATES

Boston	3.615c
Boston 3/16-inch	3.04c
Buffalo	3.65c
Chicago	3.30c
Cincinnati	3.50c to 3.60c
Cleveland	3.46c
Detroit	3.45c
Detroit, 3/16-inch	3.45c
Los Angles	3.65c
New York	3.64c
Philadelphia	3.65c
Philadelphia, 3/16-inch	3.95c
San Francisco	4.10c
Seattle	4.25c
St. Louis	3.45c
St. Paul	3.55c

NO. 10 BLUE ANNEALED SHEETS

Boston, 3/16-inch	4.615c
Buffalo	4.45c
Chicago	4.35c
Cincinnati	4.10c
Cleveland	3.75c to 4.06c
Detroit	4.30c
Los Angeles	5.20c
New York	4.59c
Philadelphia	4.25c
San Francisco	5.25c
Seattle	4.75c
St. Louis	4.45c
St. Paul	4.60c

NO. 28 BLACK SHEETS

Boston	5.75c
Buffalo	5.25c
Chicago	5.20c
Cincinnati	4.90c
Cleveland	4.75c
Detroit	5.15c
Los Angeles	6.50c
New York	5.15c
Philadelphia	5.15c
San Francisco	5.80c
Seattle	5.75c
St. Louis	5.30c
St. Paul	5.45c

NO. 28 GALVANIZED SHEETS

Boston	6.90c
Buffalo	6.35c
Chicago	6.35c
Cincinnati	5.90c
Cleveland	5.80c
Detroit	6.30c
Los Angeles	7.30c
New York	6.05c to 6.15c
Philadelphia	6.25c
San Francisco	6.50c
Seattle	6.75c
St. Louis	6.45c

BANDS

Boston	4.80c
Buffalo	4.35c
Chicago	3.95c
Cincinnati	4.00c to 4.10c
Cleveland	4.01c to 4.16c
Detroit	4.10c
Los Angles	4.60c
New York	4.39c
Philadelphia	4.35c
San Francisco	4.75c
Seattle	5.10c
St. Paul	4.20c

HOOPS

Boston	5.80c
Buffalo	4.65c
Chicago	4.55c
Cleveland	4.01c to 4.16c
Detroit	4.95c
New York	5.19c
Philadelphia, 1 inch and wider 20 gage and heavier	4.75c
Seattle	5.50c
St. Paul	4.80c

COLD ROLLED STEEL

Boston (rounds)	4.75c
Boston (shapes)	5.25c
Buffalo (rounds)	4.70c
Buffalo (shapes)	5.20c
Chicago (rounds)	4.55c
Chicago (shapes)	5.05c
Cincinnati (rounds)	4.50c
Cincinnati (shapes)	5.00c
Cleveland (rounds)	4.25c
Cleveland (shapes)	4.75c
Detroit (rounds)	4.55c
Detroit (shapes)	5.05c
Los Angles (rounds)	5.90c
New York (rounds)	4.65c
New York (shapes)	5.15c
Philadelphia (rounds)	4.35c
Philadelphia (shapes)	4.85c
San Francisco (rounds)	5.75c
Seattle (rounds)	6.00c
St. Paul (rounds)	4.55c

Co., has purchased a 45,000 square foot plot of ground, opposite its present plant on Wilbur avenue, for future expansion.

NEW YORK—The general contract has been awarded by the Otis Elevator Co. for a 5-story addition to its Yonkers, N. Y. plant, the work going to the Turner Construction Co.

NEW YORK—The John Polachek Bronze & Iron Co. has been incorporated with $1,250,000 capital stock by J. and S. Polachek and E. H. Geiger. The company is represented by S. Hellinger, 305 Broadway.

NEW YORK—Work will be started shortly by the New York Edison Co., on an automobile service and storage building. A machine shop is included in the plans. Thomas E. Murray, 55 Duane street, is engineer.

RICHMOND, N. Y.—The Brewer Dry Dock Co. plans the erection of a 1-story addition to its repair works, 50x62 feet, to be built at an estimated cost of $17,000.

ROCHESTER, N. Y.—The Genesee Bridge Co., 666 Plymouth avenue, plans the erection of a structural steel and iron works to be built at an estimated cost of $60,000.

SARATOGA SPRINGS, N. Y.—Approximately $50,000 will be expended by the Baker Mfg. Corp. on a 1-story iron foundry, 50 x 112 feet.

UTICA, N. Y.—The Republic Radiator Corp. has been recently organized with a capital of $150,000, and will establish shortly a plant, employing about 100 men to manufacture steam and water radiators.

CINCINNATI—The Union Gas & Electric Co. plans the erection of a transformer station.

CINCINNATI—The Ultra Marine Co. plans the erection of a plant building.

CLEVELAND—The Cleveland Structural Steel Co., 6600 Park avenue, is drawing plans for the erection of a 1-story factory building to be built at an estimated cost of $50,000.

CLEVELAND.—The L. & M. Plating Co. has been incorporated with $10,000 capital stock by T. Paul Titus, William J. Lavin and Stephen Ciehenski.

CLEVELAND.—The Ohio Gear & Machine Co. has been incorporated with $20,000 capital stock by H. H. Johns, Mark H. Swank, P. D. Baltec, Ernest Blower and Charles L. Viering.

DAYTON, O.—The Burkett Closed Body Co. contemplates the erection of a 1-story factory addition, 115x120 feet.

IRONTON, O.—The Foster Stove Co. has awarded a contract for the erection of an addition to its plant.

PIQUA, O.—The Favorite Stove & Range Co. plans the erection of an enameling building, 43x68 feet, to be built at an estimated cost of $5000.

TOLEDO, O.—The Sandusky Cement Co. plans to build a small town comprising 150 to 200 homes at Silica, O.

WASHINGTON COURT HOUSE, O.—A company is being formed here to engage in the manufacture of electric washing machines. Officers of the organization are R. W. Allen, A. N. Haines, Raymond Cline and George L. Wilson.

YOUNGSTOWN, O.—The Standard Chandelier Co. has been incorporated with $10,000 capital stock by John F. Eskay, Harry A. Sigmier and Florence E. Sigmier.

AMBLER, PA.—Bids closed July 6, by Harry F. Rispel, architect, on the factory building for the American Chemical Paper Co.

CATASAUQUA, PA.—Bryden Horseshoe Co., is erecting a new plant here, which upon completion, will house the Neverslip Works of the company, now located at New Brunswick, N. J.

LOWER GWYNEDD, PA.—The American Chemical Paint Co. plans the erection of a 2-story factory building.

MIDDLETOWN, PA.—The Wincroft Stove Works plans the erection of a foundry and assembling works.

PHILADELPHIA—William A. Matsinger, 5851 Walnut street, has had plans prepared for the erection of a 1-story factory building.

PHILADELPHIA—The Steel Heddle Mfg.

(*Concluded on Page* 138)

Bourne-Fuller Service

includes immediate shipment of all Iron and Steel materials from Cleveland and Cincinnati

Warehouses

If you are not receiving our Stock-list we shall be glad to send it to you regularly upon request.

Upson Works

Open Hearth Steel Bars for special uses. Also a complete line of Bolts and Nuts. Prompt Shipments.

THE
BOURNE-FULLER CO.
Iron, Steel
Pig Iron
Coke

CLEVELAND

New York **Chicago** **Detroit**
San Francisco
Cincinnati

Iron and Steel Production

Compiled By IRON TRADE REVIEW

Pig Iron

	Stacks No.	Stacks In	Output Total	Output Av. daily
1907				
January	376	311	2,174,801	70,155
February	374	308	2,047,036	73,109
March	377	304	2,186,709	70,539
April	378	327	2,226,708	74,223
May	391	329	2,291,030	73,904
June	392	341	2,237,420	74,580
July	396	335	2,253,243	72,685
August	397	329	2,243,656	72,376
September	399	329	2,174,148	72,471
October	401	314	2,359,690	76,119
November	398	226	1,820,558	60,685
December	398	154	1,234,733	39,830
Total			25,249,732	
1908				
January	398	139	1,081,813	34,897
February	401	150	1,086,809	37,476
March	398	154	1,229,856	39,672
April	398	146	1,155,122	38,504
May	396	145	1,168,002	37,677
June	395	154	1,106,300	36,876
July	397	166	1,228,604	39,632
August	399	181	1,366,019	44,065
September	399	189	1,416,252	47,208
October	400	200	1,573,824	50,764
November	402	212	1,582,314	52,744
December	403	221	1,723,664	55,602
Total			15,718,579	
1909				
January	406	234	1,787,473	57,683
February	407	233	1,682,470	60,088
March	406	229	1,822,024	58,793
April	406	224	1,731,406	57,687
May	407	236	1,866,757	60,218
June	408	240	1,929,929	64,334
July	409	258	2,088,620	67,375
August	412	278	2,232,642	72,021
September	413	297	2,378,655	79,201
October	413	309	2,589,681	83,538
November	414	311	2,532,740	84,425
December	416	314	2,682,702	86,539
Total			25,325,099	
1910				
January	416	311	2,599,995	83,871
February	417	311	2,429,525	86,768
March	417	310	2,588,736	83,508
April	418	291	2,477,700	82,590
May	419	279	2,374,802	76,607
June	420	271	2,288,279	76,276
July	420	254	2,158,124	69,617
August	422	244	2,103,791	67,864
September	420	234	2,048,461	68,282
October	421	230	2,086,205	67,297
November	421	218	1,910,385	63,679
December	421	193	1,779,899	57,416
Total			26,845,902	
1911				
January	421	210	1,766,658	56,985
February	421	226	1,781,285	63,617
March	421	236	2,165,764	69,863
April	421	220	2,044,904	68,163
May	421	206	1,871,388	60,367
June	421	202	1,773,282	59,109
July	423	196	1,776,108	57,294
August	423	206	1,921,832	61,995
September	423	216	1,973,918	65,797
October	421	214	2,092,061	67,486
November	421	214	1,999,100	66,637
December	422	215	2,032,301	65,558
Total			23,198,601	
1912				
January	421	227	2,052,806	66,220
February	422	235	2,098,796	72,372
March	420	237	2,411,529	77,791
April	421	239	2,377,621	79,254
May	423	243	2,503,341	80,753
June	424	242	2,433,737	81,125
July	422	245	2,402,567	77,502
August	423	255	2,500,163	80,650
September	419	262	2,444,454	81,482
October	422	280	2,683,645	86,569
November	423	289	2,639,562	87,985
December	423	291	2,777,292	89,590
Total			29,325,513	
1913				
January	423	297	2,787,800	89,929
February	423	306	2,578,670	92,095
March	423	278	2,762,823	89,123
April	421	297	2,754,353	91,812
May	421	285	2,816,825	90,865
June	422	283	2,616,883	87,229
July	422	264	2,558,275	82,525
August	424	260	2,537,018	81,839
September	425	258	2,494,098	83,137
October	425	244	2,539,924	81,933
November	424	225	2,229,960	74,322
December	424	191	1,976,138	63,746
Total			30,652,767	
1914				
January	423	199	1,879,336	60,624
February	423	219	1,888,607	67,450
March	423	232	2,341,551	75,534
April	422	212	2,261,501	75,383
May	422	198	2,097,019	67,646
June	422	193	1,904,566	63,486
July	422	187	1,955,324	63,075
August	422	187	1,996,483	64,403
September	422	180	1,882,718	62,757
October	422	162	1,767,227	57,007
November	421	150	1,501,269	50,042
December	421	154	1,495,325	48,236
Total			22,970,926	
1915				
January	421	165	1,591,024	51,323
February	421	179	1,666,592	59,521
March	421	190	2,046,280	66,009
April	421	197	2,114,518	70,484
May	421	207	2,255,157	72,747
June	421	221	2,369,932	78,998
July	421	234	2,563,311	82,687
August	421	246	2,774,825	89,510
September	420	266	2,834,342	94,478
October	420	276	3,120,340	100,656
November	421	285	3,035,235	101,174
December	421	295	3,201,605	103,278
Total			29,573,161	
1916				
January	421	304	3,171,878	102,319
February	421	312	3,078,548	106,157
March	422	315	3,327,630	107,343
April	422	320	3,225,496	107,517
May	423	321	3,364,584	108,535
June	423	325	3,213,818	107,127
July	419	316	3,221,127	103,907
August	419	317	3,197,838	103,156
September	419	326	3,208,041	106,935
October	419	328	3,508,180	113,167
November	420	322	3,317,805	110,593
December	422	309	3,184,178	102,715
Total			39,019,123	
1917				
January	422	310	3,159,839	101,930
February	422	317	2,649,935	94,641
March	423	331	3,255,813	105,026
April	425	333	3,328,061	110,936
May	425	340	3,413,677	110,119
June	427	347	3,260,234	108,675
July	429	351	3,337,442	107,659
August	431	357	3,238,970	104,483
September	431	342	3,140,742	104,691
October	433	354	3,296,286	106,332
November	434	344	3,198,597	106,620
December	435	321	2,885,380	93,077
Total			38,164,976	
1918				
January	435	294	2,403,227	77,523
February	435	319	2,318,242	82,723
March	438	338	3,209,996	103,548
April	437	351	3,273,355	109,112
May	437	360	3,451,884	111,351
June	437	353	3,316,148	110,538
July	437	364	3,408,584	109,954
August	439	371	3,378,479	108,983
September	438	364	3,413,223	113,774
October	437	364	3,482,392	112,335
November	437	360	3,347,844	111,595
December	435	351	3,434,114	110,778
Total			38,437,488	
1919				
January	435	330	3,306,279	106,654
February	435	311	2,943,347	105,120
March	435	279	3,088,023	99,614
April	435	216	2,474,374	82,479
May	433	197	2,107,729	67,991
June	433	199	2,114,028	70,467
July	434	240	2,424,212	78,200
August	432	266	2,742,081	88,453
September	433	163	2,480,790	82,692
October	432	216	1,864,424	60,142
November	432	252	2,407,369	80,244
December	432	262	2,626,074	84,711
Total			30,578,780	
1920				
January	432	285	3,012,373	97,172
February	432	305	2,984,257	102,904
March	433	315	3,375,768	108,895
April	433	278	2,752,670	91,754
May	433	297	2,991,825	96,510
June	433	302	3,046,623	101,553
July	434	291	3,043,918	98,190
August	434	306	3,145,536	101,468
September	434	317	3,124,308	104,143
October	435	290	3,288,341	106,075
November	435	255	2,935,081	97,836
December	435	202	2,700,268	87,105
Total			36,400,968	
1921				
January	436	184	2,414,753	77,895
February	436	155	1,929,394	68,906
March	436	103	1,594,866	51,447
April	436	96	1,190,751	39,691
May	436	90	1,215,272	39,202
June	436	74	1,064,007	35,466
July	435	69	864,642	27,892
August	436	69	954,901	30,802
September	435	84	985,795	32,859
October	435	95	1,234,450	39,821
November	429	120	1,414,958	47,165
December	429	123	1,642,775	52,992
Total			16,506,564	
1922				
January	430	127	1,645,804	53,090
February	429	139	1,630,180	58,220
March	429	155	2,035,908	65,674
April	429	161	2,070,161	69,005
May	427	175	2,309,348	74,495
June	427	191	2,362,455	78,748
July	427	170	2,403,030	77,517
August	427	143	1,810,665	58,408
September	427	189	2,024,008	67,466
October	428	218	2,629,655	84,827
November	428	241	2,846,110	94,870
December	428	253	3,083,520	99,468
Total			26,850,844	
1923				
January	428	261	3,228,226	104,136
February	424	278	2,993,918	106,925
March	424	295	3,523,595	113,664
April	424	311	3,547,012	118,233
May	424	322	3,868,486	124,790
June	425	323	3,673,503	122,450

Ingots and Castings

By American Iron and Steel Institute

	Ingots	Castings	Total
1918	43,051,022	1,411,410	44,462,432
1919	33,694,795	976,437	34,671,232
1920	40,881,392	1,251,542	42,132,934
1921	19,184,084	559,713	19,743,797
1922	34,568,418	1,034,508	35,602,926

Monthly Ingot Output

Gross Tons

1922	84.13 per cent of capacity	Indicated total
January	1,593,482	1,890,000
February	1,745,022	2,070,000
March	2,370,751	2,820,000
April	2,444,513	2,910,000
May	2,711,141	3,220,000
June	2,634,477	3,130,000
July	2,487,104	2,960,000
August	2,214,582	2,630,000
September	2,373,779	2,820,000
October	2,872,415	3,410,000
November	2,889,297	3,440,000
December	2,779,890	3,300,000
Total	29,116,453	34,600,000
1923		
January	3,251,694	3,860,000
February	2,919,017	3,460,000
March	3,402,007	4,040,000
April	3,321,278	3,950,000
May	3,537,753	4,200,000

Speedy Handling Means Bigger Output

As long as production is behind demand, the need will be for increased output. That is a hard proposition under present labor conditions, but many concerns have done it by improving their handling methods. And they have proved beyond question that hand labor cannot compare with machinery for speedy, economical and dependable handling.

The Brownhoist locomotive crane shown at work here is releasing many men for more productive work. The crane is a great deal faster than hand labor; it is more dependable and operates at a fraction of the cost.

If you are interested in the rapid and dependable handling of materials, we would like to send you our Catalog K. This is a valuable book on all kinds of locomotive crane work and shows how many companies have improved their handling methods. The catalog will be sent on request.

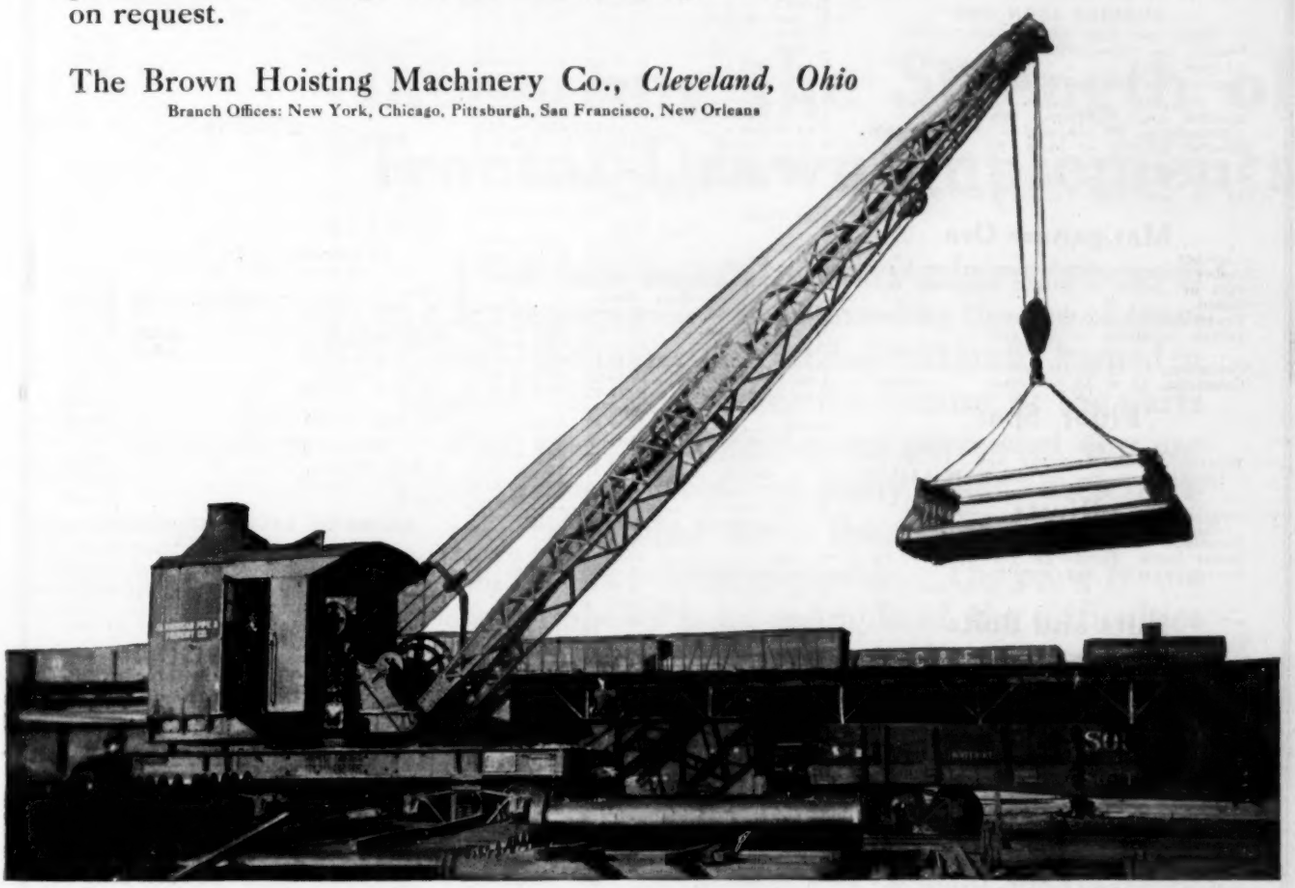
The Brown Hoisting Machinery Co., *Cleveland, Ohio*

Branch Offices: New York, Chicago, Pittsburgh, San Francisco, New Orleans

Brownhoist Products

Locomotive Cranes
Creeper Cranes
Concrete Bunkers
Chain Conveyors
Belt Conveyors
Bridge Cranes
Buckets, etc.

Literature on request



BROWNHOIST

MATERIAL HANDLING MACHINERY

East of the Mississippi

(*Continued from Page* 134)

Co., Twenty-first street and Allegheny avenue, plans to erect a plant at Greenvills, S. C.

PHILADELPHIA.—A general contract for a $60,000 ice plant for the American Ice Co. has been awarded to C. Leslie Weir, New York.

PHILADELPHIA—A $70,000 plant will be erected here by the H. F. Walliser Co. The William Steele & Sons Co., has been awarded the general contract.

PHILADELPHIA—Plans are being prepared by R. Brogmard Okie, architect, for a factory addition for E. Stanley Perkins, at Wayne avenue and Bristol.

PHILADELPHIA—Part of the plant of the Darby Steel Equipment Co., 1927 North Germantown avenue, recently was damaged by fire. It will be rebuilt.

PHILADELPHIA—The Ellwood Ivins Tube

Iron and Steel Prices

Iron Ore

LAKE SUPERIOR ORES

Per Gross Ton Lower Lake Ports

Old range Bessemer, 55 per cent iron.$6.45
Mesabi Bessemer, 55 per cent iron.... 6.20
Old Range nonbessemer, 51½ per cent iron 5.70
Mesabi nonbessemer, 51½ per cent iron 5.55

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 53 to 63 per cent ..... 10.00 to 11.00
Copper free low phosphorus 53 to 65 per cent..... 13.25 to 16.50

FOREIGN IRON ORE

Cents per unit, c.i.f. Atlantic ports

Spanish low phosphorus, 52 to 54 per cent ..... 9.50 to 11.00
Algerian low phosphorus, 52 to 54 per cent ..... 10.50 to 11.00
Swedish and Norwegian low phosphorus, 68 per cent.... nominal
Swedish foundry or basic, 66 to 68 per cent..... 11.25
Spanish foundry or basic, 50 to 54 per cent ..... 8.50 to 9.50

Manganese Ore

Prices do not include duty at rate 1 per cent per pound of metallic manganese contained.

Brazilian, minimum 47 per cent nominal
Indian, minimum 47 per cent .....42 cents c.i.f. tidewater
Caucasian, 53 to 55 per cent.....
Caucasian, 53 to 55 per cent. nominal

Fluor Spar

85 and 5% grade

Washed gravel, Kentucky and Illinois mines, per net ton.$20.00 to $23.50

Rivets

Structural rivets, Pittsburgh.. 3.15c to 3.25c
Boiler rivets, Pittsburgh .... 3.25c to 3.35c
Rivets, 7/16-in. and smaller..... 60 and 10 to 60 and 5 off

Nuts and Bolts

NUTS

(Up to 1¼ and 1⅓ inches inclusive)

Hot pressed square or hexagon blank .....$3.25 to $3.50 off list
Hot pressed square or hexagon tapped .....$3.00 to $3.25 off list
Cold punched square or hexagon blank .....$3.25 to $3.50 off list
Cold punched, square or hexagon, ...$3.00 to $3.25 off list
Cold punched semifinished hexagon nuts ⅜-inch and larger.....70-10-2½ off
Cold punched semifinished hexagon nuts 9/16-inch and smaller.....70-10-5 off

Price f.o.b. Pittsburgh, Packages of 50.

CARRIAGE BOLTS

(¾ x 6 inches, smaller and shorter)

Rolled thread .....50 and 10 off
Cut thread ..... 50 off
Larger and longer ..... 50 off

MACHINE BOLTS

(¾ x 4 inches, hot pressed nuts)

Rolled thread ..... 60 off
Cut thread ....50, 10 and 10 off
Larger and longer ....50, 10 and 10 off

(¾ x 4 inches, cold punched nuts)

Cut thread .....45 off
Larger and longer.....45 off
Lag screws .....60 off
Plow bolts Nos. 1, 2 and 3 heads..50-5 off
4 to 10 heads .....50-5+20 off
Stove bolts .....75-5 off
Tap bolts .....25 off
Bolt ends with hot pressed nuts..50-10 off
Bolt ends with cold punched nuts....45 off
Blank bolts .....50 and 10 off
Rough stud bolts with nuts.....50 off

WASHERS

Wrought washers .....$4.85 to $5.00 off

Steel Pipe

(First column*—effective March 19, 1923)
(Second column—effective April 19, 1923)
*Wheeling Steel Corp. discounts.
Pittsburgh basing discounts, jobbers' carloads.

	Black	Galvanized
Butt Weld		
⅛-inch	44 to 45	18½ to 19½
¼ and ⅜-inch	50 to 51	24½ to 25½
½-inch	55 to 56	41½ to 42½
¾-inch	59 to 60	47½ to 48½
1 to 3-inch	61 to 62	49½ to 50½
Lap Weld		
2-inch	54 to 55	42½ to 43½
2½ to 6-inch	58 to 59	46½ to 47½
7 to 8-inch	55 to 56	42½ to 43½
9 and 10-inch	54 to 54	41½ to 41½
11 and 12-inch	54 to 53	41½ to 40½
REAMED AND DRIFTED		
Butt Weld		
1 to 3-inch	59 to 60	47½ to 48½
Lap Weld		
2-inch	52 to 53	40½ to 41½
2½ to 6-inch	56 to 57	44½ to 45½
EXTRA STRONG—PLAIN ENDS		
Butt Weld		
⅛-inch	40 to 41	23½ to 24½
¼ and ⅜-inch	46 to 47	29½ to 30½
½-inch	52 to 53	41½ to 42½
¾-inch	57 to 58	46½ to 47½
1 to 1½-inch	59 to 60	48½ to 49½
2 to 3-inch	60 to 61	49½ to 50½
Lap Weld		
2-inch	52 to 53	41½ to 42½
2½ to 4-inch	56 to 57	45½ to 46½
4½ to 6-inch	55 to 56	44½ to 45½
7 to 8-inch	51 to 52	38½ to 39½
9 and 10-inch	45 to 45	32½ to 32½
11 and 12-inch	45 to 44	32½ to 31½
DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	41 to 42	31½ to 32½
¾ to 1½-inch	44 to 45	34½ to 35½
2 to 2½-inch	46 to 47	36½ to 37½
Lap Weld		
2-inch	40 to 41	31½ to 32½
2½ to 4-inch	42 to 43	33½ to 34½
4½ to 6-inch	41 to 42	32½ to 33½
7 to 8-inch	37 to 38	24½ to 25½

Wrought Iron Pipe

(Effective Jan. 23, 1923)

Pittsburgh basing discounts, jobbers, carloads

	Black	Galvanized
THREADS AND COUPLINGS		
Butt Weld		
¼ and ⅜-inch	+11	+39
½-inch	22	2
¾-inch	28	11
1 to 1½-inch	30	13
Lap Weld		
1¼ and 1½-inch	Upon application	
2-inch	23	7
2½ to 6-inch	26	11
3 to 6-inch	28	13
7 to 12-inch	26	11
PLUGGED AND REAMED		
Two points less than above		
EXTRA STRONG, PLAIN ENDS		
Butt Weld		
¼ and ⅜-inch	+19	+54
½-inch	21	7
¾-inch	28	12
1 to 1½-inch	30	14
Lap Weld		
2-inch	23	9
2½ to 4-inch	29	15
4½ to 6-inch	28	14
7 to 8-inch	21	7
9 to 12-inch	16	2
DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39
Lap Weld		
2 and 2½-inch	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	..

Boiler Tubes

L. C. L. discounts. C. L. 4 points larger

STEEL (Lap welded)

(Effective April 19, 1923)

2 and 2¼-inch ..... 23 off
2½ and 2¾-inch ..... 33 off
3-inch ..... 36 off
3¼ to 3¾-inch .....38½ off
4 to 13-inch ..... 42 off

CHARCOAL IRON

(Effective April 12, 1923)

1½-inch .....+22
1¾-inch .....+12
2 and 2¼-inch .....+ 2
2½ to 3-inch 3
3¼ to 4½-inch 5

SEAMLESS COLD DRAWN

(Effective April 19, 1923)

1-inch ..... 51 off
1¼ and 1½-inch ..... 43 off
1¾-inch ..... 27 off
2 and 2¼-inch ..... 18 off
2½ and 2¾-inch ..... 28 off
3 and 3¼-inch ..... 32 off
3½ and 3¾-inch ..... 33 off
4-inch ..... 37 off
4½ and 5-inch ..... 29 off

SEAMLESS HOT ROLLED

3 and 3¼-inch ..... 34 off
3½ and 3¾-inch ..... 35 off
4-inch ..... 39 off

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras: ... .

Add $8 per net ton for more than four gages heavier than standard and add 10 per cent to theoretical weight.

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts

Carbon, 0.10 to 0.20 per cent .... 83 off
Carbon, 0.30 to 0.40 per cent .... 81 off
Carbon, 0.40 to 0.50 per cent.... 80 off

Plus differentials and extras for cutting

SEAMLESS STEEL LOCOMOTIVE AND SUPER-HEATER TUBES

(Effective April 19, 1923)

Outside diameter	Gage	Net prices per foot, f.o.b. Pittsburgh Price
2-inch	12-gage	15c
2-inch	11-gage	16c
2-inch	10-gage	17c
2¼-inch	12-gage	17c
2¼-inch	11-gage	18c
2¼-inch	10-gage	20c
3-inch	7-gage	35c
1½-inch	9-gage	15c
5⅜-inch	9-gage	55c
5½-inch	9-gage	57c

Plus usual extras for forming and for long lengths.

Sivyer Castings can be forged and welded

Frame for steel-beam tractor plow, made in Sivyer Electric Steel

SIVYER (S) CASTINGS

DEPENDABLE

Increasing the Strength of Tractor-Drawn Implements

IN developing agricultural implements to meet the requirements imposed by the use of tractors, the manufacturer has naturally turned to steel. In many cases the nature of the parts that needed strengthening permitted the use of ordinary steel. In many other cases intricate design has made the use of Sivyer Electric Steel Castings advisable. The plow frame shown above is an example of the difficulties that Sivyer metal and methods overcome efficiently and economically. Its thin and varying sections, and its intricate design, offer production problems whose solution requires the highly developed foundry practice and exceptional control of metal that have won Sivyer castings their national market.

Send Blue Prints

A number of aggressive manufacturers have divided their steel parts into three general classes: those that can be profitably forged; those that cannot be forged economically, or at all, but can be cast in ordinary steel; and those that can be cast most reliably and economically in Sivyer Electric Steel.

The last class includes especially castings with thin and sharply varying sections, and castings that have to be true to pattern, clean and smooth in order to fit the assembly with the minimum of finishing.

With Sivyer Electric Steel we have been able to show certain engineers very decided advantages and economies, not only as against ordinary steel castings and hammered forgings, but also as against malleable castings and fabricated steel.

We are especially interested in making experimental castings for automotive manufacturers. If you will send us your blue prints for troublesome parts, together with a statement of your difficulties, we will study the problems involved and recommend possible solutions without obligation on your part.

SIVYER STEEL

SIVYER STEEL CASTING COMPANY, MILWAUKEE

Works, Inc., is having plans prepared for the erection of a 2-story building, 25x55 feet. Andrew C. Borzner, 717 Walnut street is architect.

PHILADELPHIA.—A $70,000 plant will be erected here by the H. F. Walliser Co. The Wm. Steele & Sons Co., has been awarded the general contract.

PHILADELPHIA.—E. I. du Pont de Nemours Co., Wilmington, Del., will start work shortly on alterations to its plant at Gray's Ferry, west of Thirty-fifth street. Approximately $25,000 will be expended.

PHILADELPHIA—The North Bros. Mfg. Co., Lehigh and American streets, manufacturer of tools, etc., will erect a 5-story plant building, 60x120 feet, to be built at an estimated cost of $90,000.

RUTHERFORD, PA.—Approximately $500,000 will be expended by the Philadelphia & Reading railroad on the erection here of a coal handling station, consisting of a coal crushing plant; 2000-ton coaling bin and conveying equipment.

SHARPSBURG, PA.—The National Engineering & Machine Co. plans the erection of a plant addiion to be built at an estimated cost of $50,000. W. H. Caldwell is president of the company.

WILKES-BARRE, PA.—The Stanley Steel Welded Corp., manufacturer of automobile wheels, is contemplating the establishment of a plant in the Wyoming valley. The former plant of the Matheson Motor Co. may be taken over.

BRISTOL, R. I.—The National India Rubber Co. plans the erection of a 1-story plant addition, 60x180 feet.

PAWTUCKET, R. I.—Work has been started by the Blackstone Gas & Electric Co., subsidiary of Stone & Webster Co., on additions to the company's plant along the waterfront here.

PROVIDENCE, R. I.—The Circular Tool Co., Inc., has been incorporated to build machinery with 500 shares of common stock without par value by Walter B. Hopkins, George F. Hopkins and L. J. Hopkins.

CHATTANOOGA, TENN.—The Tennessee Electric Co., contemplates the erection of a $1,500,000 steam plant.

BARABOO, WIS.—A 2-story, fireproof garage, 65x90 feet, costing $25,000, will be erected at once by the H. H. Mueller Auto Co. Architect Edward Tough, Madison, Wis., is completing plans.

BLACK RIVER FALLS, WIS.—Articles of incorporation have been filed by the Jackson Box Co., capital stock $70,000, organized by H. H., W. R. and W. B. Scholfield to manufacture wooden, fiber and composition containers of all kinds.

DODGEVILLE, WIS.—Articles of incorporation have been filed by the Rule Mining Co., capital stock $100,000. The promoters are C. W. Singer, J. M. Hayden and R. E. Peddler.

KENOSHA, WIS.—The Nash Motors Co. will double its forge shop and modernize the present plant, enlarging also the equipment.

MADISON, WIS.—A Wisconsin charter has been granted to the Ellison Engineering & Furnace Co. of Chicago, which will do business at Green Bay and Montello, Wis., according to its application.

MENOMINEE, WIS.—Plans are being prepared by the state power plant engineer, Madison, for a $75,000 boiler house and power plant for the Stout Institute here. New boilers, engines, generators and switchboards will be purchased. Burton E. Nelson is president.

MILWAUKEE—The Chicago & Northwestern railroad has taken out a permit to build a $35,000 coal hopper at the foot of Corcoran street in Milwaukee.

MILWAUKEE.—The Auto Equipment Co. has been incorporated with $25,000 capital to manufacture, wholesale and retail automobile supplies and accessories.

MILWAUKEE—The Modern Auto Repair Co., 2431 State street, expects to award contracts July 5 for a 1-story extension of its garage and repair shop. The addition will be 110x125 feet and cost about $40,000 with new machinery.

MILWAUKEE—The Newton Enginering Co., 183 Mason street, Milwaukee, has taken the contract to build an overhead bridge of concrete and steel north of Kewaskum, in Washington county, at $31,111.

MILWAUKEE.—The Badger Corp. of Milwaukee has been formed with $10,000 capital stock by John L. Keegan, Ben W. Reynolds, attorney, and Frank H. DeBrun, to manufacture tools, machinery and automobile accessories.

MILWAUKEE.—The bid of the Ames Iron Works, Oswego, N. Y., to install two 100-kilowatt unaflow engines in the Riverside pumping plant at $16,250 has been accepted by the water department.

MILWAUKEE.—Oil Heating, Inc., is the name of a new Milwaukee corporation having $200,000 capital, formed to manufacture and deal in oil burner heating devices for industrial, commercial and domestic purposes.

MINERAL POINT, WIS.—A high school costing $150,000 will be built next fall according to plans now being prepared by Architect Edward Tough of Madison, Wis. Manual training departments are included in the plan.

OSHKOSH, WIS.—The factory of the Washkosh Mfg. Co., washing machines, will be reopened at once by Perry E. Haworth of Chicago, who purchased the assets at bankruptcy sale for $10,000. Mr. Haworth has re-engaged Theodore Engelke as factory manager.

RICE LAKE, WIS.—A $25,000 garage and repairshop will be built here by C. O. Ronning & Co. The building will be 50 x 150 feet, part 2-stories, Architect F. E. Johnson has completed plans.

WAUTOMA, WIS.—The county board accepted the proposition of the Heating & Power Appliance Co., 200 Pleasant street, Milwaukee, to build and equip a central heating plant for the courthouse, jail and other county buildings on a percentage basis.

WOODVILLE, WIS.—The O'Neil & Preston Co., St. Paul, Minn., has taken the general contract to build a water works system for the village, at $34,000. The Minneapolis Steel & Machinery Co. will furnish the steel tank and tower at $10,000.

CARTHAGE, MO.—The Leggett & Platt Spring Bed & Mfg. Co. contemplates the erection of a factory addition to be built at an estimated cost of $50,000.

New Trade Publications

PUMPS—The Goulds Mfg. Co., Seneca Falls, N. Y. recenly has isued a 4-page folder illustrating and describing a new line of single stage double suction centrifugal pumps. A cross sectional view of the pump is included in the pamphlet showing the location of the various parts of the pump. Other illustrations are included showing the pump when connected with an electric motor, steam turbine, gasoline engine and when arranged for belt drive.

ELECTRIC FURNACES—Electric Furnaces for the Laboratory and their Construction, is the title of a booklet published by the Norton Co., Worcester, Mass. The material contained in the booklet includes a classification of electric furnaces, description of a small wire resistance furnace, description of combustion furnaces, tube furnaces, muffle furnaces, platinum wound furnaces, tungsten or molybdenum wound furnaces and those of the carbon resistance type. The booklet is well illustrated.

PUNCHING MACHINES—A folder published by the Cleveland Punch & Shear Works Co. Cleveland, illustrates a variety of machines built to punch and shear iron and steel. The machines illustrated include a multiple punch, angle shear, bar shear, plate planer, bending roll, horizontal punch, gate shear, wall radial drill, bending machine, rotary planer, flanging clamp and vertical open gap machine. Instructions are also given on the care of punches and dies.

FLOW METERS—The Hyperbo-Electric Flow Meter Co., Chicago, has published a 48-page illustrated booklet in which hyperbo electric flow meters, for the accurate measurement of steam, gas, air, water and oil, are described and illustrated. This meter consists of four elemets: hyperbo elbow and straightening grids; meter body; electrical recording mechanism and automatic correcting devices. The apparatus is simple in operation and all parts are strongly constructed and positive in action. A complete description of the various parts is given and the salient features of the equipment pointed out.

CRUCIBLES—A 22-page booklet has been issued by the Ross-Tacony Crucible Co., Tacony, Philadelphia, listing the various types of crucibles manufactured by this company. Information is included concerning brass crucibles, steel crucibles, phosphorizers, retorts, stirrers, skimmers, special crucibles for use in furnaces of the tilting type, stoppers, nozzles and sleeves. Reproduced photographs show a portion of the factory including the storeroom, shipping room, yard and storage sheds. Instructions are also given concerning the methods for taking care of crucibles.

GRINDING—The Norton Co., Worchester, Mass. has published a 28-page booklet on Grinding Wheel Information and a booklet on Factors Affecting Grinding Wheel Selection. The first mentioned booklet describes the methods used in the manufacture of grinding wheels, the various ways of marking grinding wheels, proper procedure in ordering wheels, methods of testing, mounting, etc., safety protection devices, operating speeds, and ways for determining operating speeds. The second booklet discusses the various factors that should be given consideration in order that the wheel selected may meet the demands placed upon it.

Another Reason for the Superiority of
MANSFIELD QUALITY SHEETS

Mansfield 15" x 16" Bottom Cast Ingots

Above is a view of our 15" x 16" *bottom* poured ingot, fractured in the middle of the ingot.

Note the solid and uniform appearance of the fracture, with a single line of blow holes more than two inches beneath the outer skin of the ingot. These blow holes, during the process of rolling, flatten down and the sides weld together.

Had this ingot been *top* cast, it would have required only 25 seconds to cast. But, being *bottom* cast—in groups of twelve—between four and five minutes were required, thus permitting the gases which cause blow holes, to pass off during the slow pouring. This slow pouring also reduces the amount of pipe cavity in the ingot.

Another advantage of the small ingot is that the metal after being poured, solidifies more rapidly which reduces the danger of segregation, and gives a more homogeneous steel.

Mansfield Bottom Poured Ingots are the basis of all good steel products—

18" x 20" Top Cast Ingots

Here is a view of fractures of an 18" x 20" *top poured* ingot of a similar grade of steel as shown above.

Note the blow holes 1½" long, lying next to the outer skin of the ingot. These blow holes, tearing from one to the other during the process of rolling, produce seams in the finished bar or sheet. These blow holes are caused by gases in the steel, the greater part of which *slow* pouring would have eliminated.

WABIK METAL

A special material for Vitreous Enameling.

For Stove Door Panels, Splasher Backs, Broiler Pans, Table Tops, Refrigerators, Signs and other flat work.

Other Specialties:—

AUTOMOBILE SHEETS

Body Stock; Flat Fender and Hood Stock; Cowl Stock; Radiator Casing Stock; Crown Fender Stock.

METAL FURNITURE SHEETS
PICKLED and ANNEALED
ENAMELING STOCK
For Kitchen Utensils
MILK CAN STOCK

"Mansfield" Steel is the ultimate in Sheet Bars and in Sheets. It means satisfaction to the many users. Constant study of the needs of users, and continuous application of the results of such study, in the way of improved methods in our plants has established a reputation for reliability unsurpassed.

SHEET BARS INGOTS

WABIK

MANSFIELD SHEET & TIN PLATE COMPANY

MANSFIELD, OHIO

DISTRICT SALES REPRESENTATIVES

The L. D. Rockwell Co., 1106 National City Bldg., New York, N. Y.
Mr. D. B. Cory, 1018 Standard Oil Building, Chicago, Ill.
Mr. Geo. W. House, 1822 Ford Building, Detroit, Mich.
The L. D. Rockwell Co., 1512 B. F. Keith Bldg., Cleveland, O.
The Maynard French Steel Co., 516 Mercantile Library Bldg., Cincinnati, O.
Walter G. Clark, Inc., 215-17 Chestnut St., St. Louis, Mo.
Walter G. Clark, Inc., 1317-19 St. Louis Ave., Kansas City, Mo.
Mr. C. H. Beach, 617 Merchants Bank Bldg., Indianapolis, Ind.
Mr. A. P. Grenier, 640 Endicott Bldg., St. Paul, Minn.
Mr. Herbert P. Hill, 401 Continental Trust Bldg., Washington, D. C.
Wm. P. Horn Co., 237 Rialto Bldg., San Francisco, Cal.
Wm. P. Horn Co., 301 Kerchoff Bldg., Los Angeles, Cal.
Wm. P. Horn Co., Dekum Building, Portland, Ore.
Wm. P. Horn Co., 1426 L. C. Smith Bldg., Seattle, Wash.
Mr. Edwin Schofield, 45 Jarvis St., Toronto, Ont., Canada.

Iron and Steel Scrap Prices

CORRECTED TO TUESDAY NOON GROSS TONS DELIVERED TO CONSUMER

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	15.00 to 16.00
Boston (dealers)	12.50 to 13.00
Buffalo	20.00 to 20.50
Chicago	17.00 to 17.50
Cleveland	18.00 to 18.50
Cincinnati	15.50 to 16.00
Detroit (dealers)	14.50 to 15.00
Eastern Pennsylvania	16.50 to 17.50
New York (dealers)	13.50 to 14.00
Pittsburgh	18.50 to 19.00
St. Louis	17.00 to 17.50
Valleys (nominal)	20.75 to 21.00
No. 1 railroad steel New York (dealers)	14.00 to 14.50

BUNDLED SHEETS

Buffalo	$15.00 to 15.50
Cleveland	12.75 to 13.00
Cincinnati	12.50 to 13.00
Detroit	11.00 to 11.50
Eastern Pennsylvania	14.50 to 15.50
Pittsburgh	16.50 to 17.00
St. Louis	11.00 to 11.50
Valleys	15.00 to 15.50

STEEL RAILS, SHORT

Birmingham	17.00 to 18.00
Boston (dealers)	12.50 to 13.00
Chicago	20.00 to 20.50
Cincinnati	22.00 to 22.50
Cleveland	17.00 to 17.25
St. Louis	17.00 to 17.50

STOVE PLATE

Birmingham	16.50 to 17.00
Boston	17.00 to 18.00
Buffalo	17.00 to 17.50
Chicago	16.50 to 17.00
Cincinnati (net tons)	10.50 to 11.00
Cleveland	16.00 to 16.25
Detroit (net ton) (dealers)	13.00 to 14.00
Eastern Pennsylvania	16.50 to 17.50
New York (dealers)	13.00 to 13.50
Pittsburgh	15.50 to 16.50
St. Louis	15.00 to 15.50

LOW PHOSPHORUS

Buffalo	25.00 to 25.50
Cincinnati	15.00 to 16.00
Eastern Pennsylvania	23.00 to 24.00
Pitts. billets and bloom crops	23.00 to 23.50

SHOVELING STEEL

Chicago	16.50 to 17.00
Pittsburgh	15.50 to 16.00
St. Louis	16.50 to 17.00

KNUCKLES, COUPLERS & SPRINGS

Chicago	22.00 to 22.50
Eastern Pennsylvania	23.00 to 24.00
Pittsburgh	21.00 to 21.50
St. Louis	22.00 to 22.50

COMPRESSED SHEETS

Buffalo	17.00 to 18.00
Chicago	14.50 to 15.00
Cleveland	16.00 to 16.50
Detroit (dealers)	12.50 to 13.00
Pittsburgh	17.00 to 17.50
Valleys	19.00 to 19.50

FROGS, SWITCHES, GUARDS

Chicago	17.00 to 17.50
Eastern Pennsylvania	16.50 to 17.50
St. Louis	16.50 to 17.00

BOILER PLATE, CUT

St. Louis	11.50 to 12.00

ANGLE BARS—STEEL

Chicago	18.50 to 19.00
St. Louis	18.00 to 18.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	15.00 to 15.50
Boston (dealers)	14.00 to 14.50
Buffalo	17.00 to 18.00
Chicago, No. 1	16.75 to 17.25
Chicago, No. 2	17.00 to 17.50
Cincinnati No. 1	13.50 to 14.00
Eastern Pennsylvania	17.50 to 18.50
Pittsburgh, No. 1	16.50 to 17.00
Pittsburgh, No. 2	18.50 to 19.00
NewYork, No. 1 (dealers)	18.50 to 19.00
St. Louis, No. 1	17.00 to 17.50
St. Louis, No. 2	17.00 to 17.50

WROUGHT PIPE

Boston (dealers)	9.50 to 10.00
Buffalo	15.00 to 16.00
Eastern Pennsylvania	14.50 to 15.00
New York (dealers)	9.50 to 10.00

YARD WROUGHT

Boston	12.00 to 12.50
Eastern Pennsylvania	16.50 to 17.50

CITY WROUGHT

New York, long	$16.00 to 16.50

BUSHELING

Buffalo, No. 1	17.00 to 18.00
Chicago, No. 1	15.00 to 15.50
Chicago, No. 2	12.00 to 12.50
Cincinnati No. 1	12.00 to 12.50
Cleveland, No. 1	15.75 to 16.00
Cleveland, No. 2	11.50 to 12.00
Detroit, No. 1	12.00 to 12.50
Detroit, No. 2 (new)	11.00 to 11.50
Detroit, No. 2 (old)	8.50 to 9.00
Eastern Pennsylvania	17.00 to 18.00
Pittsburgh, No. 1	16.00 to 16.50
St. Louis No. 1	16.00 to 16.50

MACHINE SHOP TURNINGS

Birmingham	8.00 to 10.00
Boston (dealers)	10.50 to 11.00
Buffalo	13.00 to 14.00
Chicago	10.00 to 10.50
Cleveland	15.75 to 16.00
Cincinnati (net tons)	10.00 to 10.50
Detroit (dealers)	9.00 to 9.50
Eastern Pennsylvania	14.50 to 15.50
New York (dealers)	12.00 to 12.50
Pittsburgh	14.00 to 14.50
St. Louis	12.00 to 12.50
Valleys	16.50 to 17.00

CAST IRON BORINGS

Birmingham (chemical)	16.50 to 17.00
Birmingham (plain)	10.00 to 11.00
Boston (chemical)	14.00 to 14.50
Boston (dealers)	10.50 to 11.00
Buffalo	15.00 to 16.00
Chicago	14.50 to 15.00
Cincinnati (net tons)	10.00 to 10.50
Cleveland	16.25 to 16.50
Detroit (dealers)	11.00 to 11.50
Eastern Pennsylvania	14.00 to15.00
Eastern Pennsylvania (chem.)	17.00 to 19.00
Pittsburgh	15.50 to 16.00
New York (dealers' price)	12.00 to 12.50
St. Louis	13.50 to 14.00
Valleys	17.50 to 17.75

MIXED BORINGS AND TURNINGS
(For blast furnace use)

Boston (dealers)	10.50 to 11.00
Cleveland	16.00 to 16.25
Detroit (dealers)	10.50 to 11.00
Eastern Pennsylvania	13.50 to 14.50
New York (dealers)	11.00 to 11.50

IRON AXLES

Birmingham	25.00 to 26.00
Boston (consumers)	31.00 to 32.00
Buffalo	28.00
Chicago	29.50 to 30.00
Cincinnati	23.50 to 24.00
Eastern Pennsylvania	28.00 to 30.00
New York (dealers)	27.00 to 28.00
St. Louis	27.00 to 27.50

IRON RAILS

Buffalo	20.00 to 21.00
Chicago	21.50 to 22.00
Cincinnati	14.50 to 15.00
St. Louis	18.50 to 19.00

PIPES AND FLUES

Chicago	12.50 to 13.00
Cincinnati	10.50 to 11.00
Cleveland	12.50 to 13.00
St. Louis	12.50 to 13.00

RAILROAD GRATE BARS

Buffalo	17.00 to 17.50
Chicago	14.50 to 15.00
Cleveland	16.00 to 16.25
Eastern Pennsylvania	17.00 to 17.50
New York (dealers)	13.00 to 13.50
St. Louis	15.50 to 16.00

FORGE FLASHINGS

Boston (dealers)	11.50 to 12.00
Chicago, small	12.50 to 13.00
Cleveland, small	15.25 to 15.50
Cleveland, large	15.00 to 15.25
Detroit (dealers)	10.00 to 10.50

FORGE SCRAP

Boston (dealers)	11.50 to 12.00
Chicago	17.00 to 17.50
Eastern Pennsylvania	16.00 to 16.50

ARCH BARS AND TRANSOMS

Chicago	26.50 to 27.00
St. Louis	24.00 to 25.00

ANGLE BARS—IRON

Chicago	26.50 to 27.00
St. Louis	24.00 to 24.50

Iron and Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	12.00 to 13.00
Buffalo	18.50 to 19.50
Chicago	14.50 to 15.00
Cleveland	17.00 to 19.00
Eastern Pennsylvania	16.50 to 17.00
Pittsburgh	17.00 to 17.50
St. Louis	13.50 to 14.00

STEEL CAR AXLES

Birmingham	21.50 to 22.00
Boston (consumers)	24.00 to 25.00
Buffalo	24.50 to 25.50
Chicago	20.50 to 21.00
Cleveland	24.00 to 25.00
Eastern Pennsylvania	20.00 to 21.00
New York (dealers)	nominal
Pittsburgh	22.00 to 22.50
St. Louis	21.00 to 21.50

SHAFTING

Boston (consumers)	23.00 to 23.50
Chicago	24.00 to 24.50
Eastern Pennsylvania	21.00 to 22.00
New York (dealers)	20.50 to 21.00
St. Louis	22.50 to 23.00

Iron Foundry Scrap

CAR WHEELS

Birmingham, tram car	19.00 to 20.00
Birmingham, iron	18.50 to 19.00
Boston (consumers)	22.00 to 23.00
Buffalo, iron	17.00 to 18.00
Chicago, iron	21.00 to 21.50
Cincinnati	16.50 to 17.00
Eastern Pennsylvania	20.00 to 21.00
New York iron (dealers)	18.00 to 19.00
Pittsburgh, iron	22.00 to 22.50
Pittsburgh, steel	21.00 to 21.50
St. Louis, iron	19.50 to 20.00

NO. 1 CAST SCRAP

Birmingham, cupola	20.00 to 20.50
Boston (consumers)	23.50 to 24.00
Buffalo	20.00 to 21.00
Chicago, cupola	23.75 to 24.25
Cincinnati No. 1 machinery cupola (net tons)	21.00 to 21.50
Cleveland, cupola	22.00 to 23.00
Detroit (net ton) (dealers)	16.00 to 16.50
Eastern Pennsylvania, cupola	20.00 to 21.00
New York, cupola (dealers)	18.00 to 19.00
Pittsburgh, cupola	22.00 to 22.50
San Francisco	26.00 to 28.00
St. Louis, railroad	20.00 to 20.50
St. Louis, agricultural	20.00 to 20.50
Valleys	22.50 to 23.00

HEAVY CAST

Boston (consumers)	20.00 to 21.00
Buffalo	16.00 to 17.00
Cleveland	15.00 to 15.50
Detroit (automobile) net ton)	19.00 to 20.00
Eastern Pennsylvania	17.50 to 19.00
New York (dealers)	17.50 to 18.50
Pittsburgh	17.00 to 17.50

MALLEABLE

Boston (railroad) (consumers)	22.00 to 23.00
Buffalo	21.00 to 22.00
Chicago, railroad	23.00 to 23.50
Chicago, agricultural	22.00 to 22.50
Cincinnati, agricultural	17.00 to 17.50
Cincinnati, railroad	19.00 to 19.50
Cleveland, agricultural	22.00 to 22.50
Cleveland, railroad, nominal	25.00 to 25.50
Detroit (dealers)	20.00 to 21.00
Eastern Pennsylvania, railroad	17.00 to 17.50
Pittsburgh, railroad	22.00 to 22.50
St. Louis, agricultural	19.00 to 19.50
St. Louis, railroad	19.00 to 19.50

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	17.00 to 18.00
Boston (dealers)	16.50 to 17.00
Chicago	18.50 to 19.00
Cleveland	20.50 to 21.00
Detroit	14.00 to 14.75
Eastern Pennsylvania	18.50 to 19.50
New York (dealers)	20.00 to 20.50
Pittsburgh district	20.50 to 21.00
St. Louis	17.00 to 17.50

LOCOMOTIVE TIRES

Chicago	18.00 to 18.50
St. Louis	17.00 to 17.50

LOW PHOSPHORUS PUNCHINGS

Chicago	19.50 to 20.00
Eastern Pennsylvania	21.00 to 22.00
Pittsburgh	23.00 to 23.50